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Attachment and Metacognition in Borderline Personality Disorder

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**Doctorate in Clinical Psychology
University of Edinburgh**

2010

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Background: Borderline personality disorder (BPD) is a psychiatric diagnosis characterized by emotional and behavioural instability, and impaired ability to maintain relationships. Previous research has demonstrated an association between BPD and insecure attachment style. It has been argued that BPD is a disorder of attachment, with insecure attachment being associated with inadequate capacity to represent mental states, or to “mentalize”. There is evidence that people with BPD are impaired in their capacity to mentalize in the context of attachment relationships. The term “mentalization” encompasses a broad range of processes including metacognition. There is a theoretical basis for metacognitive deficits in BPD. However, there is a lack of empirical evidence regarding the role of metacognition in BPD and its relationship to adult attachment style.

Method: Participants with BPD were recruited from Community Mental Health Teams, Clinical Psychology and a Dialectal Behaviour Therapy (DBT) service within NHS Highland. A comparison group of participants without BPD were recruited from the Clinical Psychology service, having been referred for symptoms of depression. Both groups were administered the Relationship Scales Questionnaire (RSQ)(a self-report measure of attachment); and a short version of the Metacognitions Questionnaire (MCQ-30). Severity of clinical symptoms and current mood was assessed using the Clinical Outcomes in Routine Evaluation (CORE) and the Hospital Anxiety and Depression Scale (HADS).

Results: Participants with BPD scored significantly higher than those without BPD on the attachment-anxiety and attachment-avoidance dimensions of the RSQ. The BPD group also endorsed MCQ-30 items more than the comparison group. There was a significant difference between the groups on the MCQ-30 total score and four of the five subscale scores. There were significant positive correlations between attachment dimension scores and metacognition subscales. The strongest associations were between attachment-anxiety and “uncontrollability and danger” and “need to control thoughts” subscales of the MCQ-30. Only metacognition was predictive of current mood and distress levels.

Conclusions: The results of this study show that people with BPD report high attachment-avoidance and attachment-anxiety in their relationships, relative to a non-BPD, depressed comparison group. These findings are consistent with the existing literature regarding the profile of attachment in BPD. This study also found that people with BPD also have more maladaptive metacognitions than people with symptoms of depression. An association between self-reported adult attachment style and maladaptive metacognition was demonstrated in the present study. Maladaptive metacognitive strategies and beliefs potentially contribute to maintenance of depressed and anxious mood, as well as broader symptoms of distress.

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1. Systematic Literature Review

A review of 25-years of the Parental Bonding Instrument in
Borderline Personality Disorder

Title: A review of 25-years of the Parental Bonding Instrument in
Borderline Personality Disorder

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Short title: Parental bonding in Borderline Personality Disorder

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Background: Borderline personality disorder (BPD) has come to be understood as a disorder of attachment. Parenting behaviour contributes to the parent-child relationship and subsequently impacts upon a child's ability to form social bonds in adulthood. The measurement of perceptions of parental behaviour by people with BPD using the Parental Bonding Instrument (PBI) is reviewed.

Method: A systematic literature search was conducted for English language studies of parental bonding and attachment in BPD. Keywords and subject headings were: 'Borderline Personality Disorder'; 'Borderline Personality'; 'Borderline State'; 'Parental Bonding; Attachment'; 'Object Attachment'; 'Attachment Behaviour'; 'Emotional attachment'; 'Self-report'; and 'Questionnaire'.

Results: Fourteen studies were retained for review. The most consistent finding was the significant low scores of people with BPD on the maternal care scale of the PBI. High maternal protection was also a frequent significant finding. Findings across the various studies for perceptions of paternal care and protection were less clear.

Conclusions: People with borderline personality disorder perceive their parents as less caring and more protective than people with other psychiatric diagnoses or than people with no history of psychiatric disorder. Overall, these findings indicate that biparental neglect and deprivation together with overprotection and restricted autonomy are implicated in BPD.

Background

Borderline Personality Disorder

Borderline personality disorder (BPD) is a psychiatric diagnosis that is characterised by a pervasive pattern of instability and intensity of interpersonal relationships, (American Psychiatric Association, 2000). The prevalence of BPD in community samples is estimated at 0.5 to 0.7 percent, (Coid, Yang & Tyrer, 2006; Samuels, Eaton & Bienvenu, 2002; Torgersen, Kringlen & Cramer, 2001). There is a high prevalence of all personality disorders in those attending mental health services, with BPD being the most common (National Collaborating Centre for Mental Health, 2009). Although it is widely thought that the disorder is more common in women, evidence from community samples has not supported this (National Collaborating Centre for Mental Health, 2009). The difference is most likely a reflection of the higher proportion of women seeking treatment from healthcare and mental health services (National Collaborating Centre for Mental Health, 2009). BPD often co-occurs with a range of presenting problems and comorbid diagnoses, including substance dependency, particularly in males, and eating disorders in females (Zanarini *et al.*, 1998); chronic self-harming (Linehan *et al.*, 1991); and common disorders such as anxiety and depression (National Collaborating Centre for Mental Health, 2009).

The aetiology of Borderline personality disorder is complex and not yet fully understood (National Collaborating Centre for Mental Health, 2009). Several potential contributing factors have been implicated: genetic vulnerability; trauma and abuse in childhood; neurophysiological and neurobiological dysfunctions of affect regulation; and disorganisation of the attachment system (National Collaborating Centre for Mental Health, 2009). In recent years BPD has come to be understood by some as a disorder of attachment, (e.g. Fonagy & Bateman, 2007) with patterns of relationships established in childhood being recreated in adult relationships. There is a growing evidence base for an association between BPD and insecurity of attachment relationships throughout life (Bateman & Fonagy, 2006).

Parental bonding and the attachment relationship

Bowlby's (1969) attachment theory describes the child's innate capacity to form an attachment to the parent or primary caregiver. Attachment theory emphasises the biological primacy of emotional bonds, and the influence of the attachment figure (parent/caregiver) upon development, (Bowlby, 1988). Although Bowlby wrote little about the caregiving system in the parent (Cassidy, 2008), he described the caregiving behaviour of the parent as reciprocal to the attachment system of the child:

‘...the biologically given strategy of attachment in the young has evolved in parallel with the complementary parental strategy of responsive caregiving – the one presumes the other.’ (Bowlby, 1991, p. 293)

However, Bowlby emphasised the greater relative contribution of learning to parental bonding than to attachment behaviour (Cassidy, 2008). Similarly, Parker and colleagues describe bonding as 'less clearly biologically determined' (Parker, Barrett & Hickie, 1992).

According to Bowlby (1969) an individual's capacity to form affectional bonds is strongly influenced by their experiences with their parents. Style of attachment in childhood has been found to persist in close relationships throughout life (Waters *et al.*, 2000); and maternal attachment states of mind assessed during pregnancy are predictive of infant attachment styles (Fonagy, Steele & Steele, 1991). Similarly, in a longitudinal study (Miller *et al.*, 1997) maternal bonding has demonstrated intergenerational transmission, independent of depression or temperament. Internal mental representations constructed within the context of early attachment relationships are the mechanism for the continuity of attachment style in adult relationships (Fonagy *et al.*, 2004). Therefore an individual's experience of interaction within the parent-child relationship is the foundation for later interpersonal functioning in adulthood. A corollary hypothesis is that inadequate parenting behaviour results in an impairment of the parent-child relationship and subsequently impacts upon a child's ability to form social bonds in adulthood (Parker *et al.*, 1992). However, the nature of parental bonding has been difficult to define. Parker *et al.* (1979) proposed two underlying dimensions of parenting behaviour: care and (over)protection. The care construct describes a dimension ranging from 'emotional coldness, indifference and rejection' to 'emotional warmth, empathy and closeness'

(Parker, 1983). The protection dimension is defined by 'promotion of independence and autonomy' at one pole, and 'control, overprotection, intrusion, excessive contact, infantilization and prevention of independent behaviour' at the other pole (Parker, 1983). These dimensions of parental bonding are consistent with the tenets of attachment theory, which states that the attachment figure provides a secure base from which an individual is able to explore his or her environment, confident that they will be cared for emotionally and physically on their return (Bowlby, 1969). Therefore the secure attachment relationship is one in which the parent is responsive to the child's physical and emotional needs for care and affection, yet sensitive to their developmental needs for autonomy and independence (Parker, 1983).

Significant differences in maternal PBI scores across attachment classifications have been observed (Manassis *et al.*, 1999). The study found that autonomous individuals perceive their parents as more caring than those with other attachment styles; and that maternal care was perceived as lowest by individuals classified as having an unresolved attachment style (Manassis *et al.*, 1999). Maternal protection was scored highest by those in the unresolved category, and lowest by those with an autonomous or dismissing attachment style (Manassis *et al.*, 1999). The study reported that the differences in PBI scores across the attachment categories were not significant for paternal care and protection. However the authors suggested that this finding reflects the predominance of the mother-child relationship in determining adult attachment states of mind (Manassis *et al.*, 1999).

Parental Bonding Instrument

The Parental Bonding Instrument (PBI)(see Appendix) was developed by Parker and colleagues (Parker *et al.*, 1979) in order to assess parental contribution to bonding in the parent-child relationship using a self-report format. The PBI was devised to comprise two scales describing care and overprotection (later renamed protection) constructs. The measure was constructed using a sample of non-clinical participants. Items from an initial set of 114 statements about parenting behaviours and attitudes were rejected due to poor distribution of responses, high item inter-correlation or lack of clear factor loadings in principle component analyses (Parker, 1983). The final scales (12 care items and 13 protection items) were obtained by imposing a two factor limit with varimax rotation (Parker, 1983). The care and protection factors accounted for 28 and 17 percent of the total variance, respectively (Parker *et al.*, 1979).

The measure is a 25-item self-report questionnaire comprising statements about the attitudes and behaviours of a parent during the first 16 years of a child's life. It is designed to be administered to adults to assess how they remember their parent(s) related to them during childhood. The same questionnaire is completed for each parent to yield separate maternal and paternal bonding scores. The respondent is instructed to rate each statement according to how well the statement describes the parent: 'very like', 'moderately like', 'moderately unlike' or 'very unlike'. In the original scoring method, the protection subscale comprises scores from 13 items and the care subscale consists of scores from the other 12 items. Each item

scores a maximum of three points, so scores on the protection subscale range from 0 to 39, and scores on the care subscale range from 0 to 36. Parker *et al.* (1983) also described a categorical scoring system, in which the raw scores of both dimensions are intersected at the mean (from normative data) to create four quadrants relating to four broad styles of parenting. High care and low protection scores reflect 'optimal parenting'; high care and high protection scores represent 'affectionate constraint'; low care and high protection scores represent 'affectionless control'; and low care, low protection scores represent 'neglectful parenting'. Figure 1 (Parker *et al.*, 1982) shows the care and protection dimensions, and their relationship to the four broad categories of parenting styles.

[PLACE FIGURE 1 ABOUT HERE]

Parker (1983) further examined the construct validity of the PBI by comparing PBI scale ratings with perceptions of care and protection assessed using semi-structured interviews. High correlations ($r = 0.77$ and 0.78) were observed between the PBI care scales and the interview ratings. The equivalent correlations were lower for the protection scales ($r = 0.48$ and 0.50) (Parker, 1983). Kazarian and colleagues (1987) confirmed a two factor structure of the PBI which accounted for 47 percent of the variance using instrument data collected from participants with schizophrenia. In a study by Mackinnon *et al.* (1989) high values for goodness-of-fit-indices indicated acceptable validity of the care and protection constructs.

In contrast to initial PBI studies, several authors have obtained three factor solutions in exploratory factor analyses and have argued that the PBI is more accurately scored according to three scales (e.g. Cubis, Lewin & Dawes, 1989; Gomez-Beneyto *et al.*, 1993; Kendler, 1996; Murphy, Brewin & Silka, 1997). This is achieved by obtaining a care scale (similar to the original) and splitting the protection scale to provide two scores describing: overprotection and restraint (Gomez-Beneyto *et al.*, 1993); protectiveness and authoritarianism (Kendler, 1996); or denial of behavioural autonomy and denial of behavioural freedom (Murphy *et al.*, 1997). Furthermore, brief versions of the PBI also favour a three factor solution (Chambers *et al.*, 2000; Cox, Enns & Clara, 2000; Heider *et al.*, 2005). Sato *et al.* (1999) used confirmatory factor analysis, conducted on the PBI responses of 418 Japanese adults, to compare the competing three factor models with the two factor model of Parker *et al.* (1979). The study found that the data was best described by a three factor solution, particularly Murphy's (1997) and Kendler's (1996) models, and that the original scoring method provided a poor fit (Sato *et al.*, 1999). They found that Kendler's (1996) model did not vary across subgroups such as age and gender, and suggested therefore that this was the superior model. They concluded that the three factor solution gave superior construct validity, however they conceded that there are advantages to the two factor model, such as the assignment of parenting style categories (Sato *et al.*, 1999). The authors recognised that the PBI may be subject to cultural factors and therefore the superiority of the three factor solution in their sample may be limited to the Japanese population,

particularly given the contrasting findings of Mackinnon *et al.* (1989) in an Australian sample. However, a subsequent study (Cox *et al.*, 2000) administered the PBI to a large sample of psychiatric patients in the USA and confirmed that Kendler's (1996) three factor model demonstrated the best performance in comparison to the alternative models.

The scales derived from both the two and three factor solutions have demonstrated acceptable to good internal consistency across a large number of studies. Parker (1979) reported split-half reliabilities of 0.88 and 0.67 for the care and protection scales, respectively; and Cronbach's alpha scores for the two scales range from 0.74 to 0.95 (Parker, 1989). It has been indicated that data from clinical samples demonstrates slightly lower internal consistency (Favaretto, Torresani & Zimmermann, 2001). With regard to the three factor model, Murphy (1997) reported alpha scores of 0.90 and 0.92 for maternal and paternal care scales; 0.81 and 0.88 for denial of behavioural freedom; and 0.78 for both maternal and paternal denial of psychological autonomy.

The two factor model of the PBI's test-retest reliability has been demonstrated as high over intervals of months, and as moderately stable over periods of up to ten years (Parker, 1990). One study has even reported acceptable reliability over a 20 year interval, with test-retest correlations ranging from 0.59 to 0.75, with the care scales being slightly more stable than protection scales (Wilhelm *et al.*, 2005). The authors conclude that the PBI is a robust and stable measure of perceived parental behaviour and that

it is relatively unaffected by variation in mood states and life events (Wilhelm *et al.*, 2005).

The convergent validity of the PBI and the Adult Attachment Interview (AAI) was explored by Manassis and colleagues (1999). This study found that attachment information obtained from the two assessments were comparable, however, the effect was limited to those participants with optimal attachment histories. Where participants demonstrated idealisation of, or anger towards their mother, the PBI lacked convergent validity with the AAI. Given that BPD is associated with insecure attachment relationships (Levy, 2005), then it follows that the PBI is not suitable for obtaining attachment information in this group.

Following the construction of the questionnaire, Parker (1983) collected data from participants recruited from patients attending general practitioners in Sydney, Australia and Oxford, England. Across all samples scores ranged between: 25.2 and 27.5 for maternal care; 12.5 and 14.5 for maternal protection; 22.5 and 24.9 for paternal care; and 11.0 and 12.8 for paternal protection (Parker, 1983). Although, these samples may not accurately reflect normative scores, for example because the samples are likely to include a high proportion of people with physical and mental health complaints, these figures at least provide some indication of PBI scores expected in the general population.

In a series of studies comparing the PBI ratings of sibling and mother-child pairs, Parker (1983) found significant moderate correlations between

the paired respondents. He tentatively concluded that these findings supported the view that perceived parental behaviour as measured by the PBI corresponds to actual parental behaviour (Parker, 1983). Mackinnon *et al.* (1991) tested the validity of the PBI using a twin sample which included monozygotic and dizygotic, male, female and mixed twin pairs. They reported an association between the PBI scores of female twins who spent a high proportion of time together in adolescence. There was a moderate correlation between the scores of male monozygotic twins who spent time together, but this was not found in the dizygotic twin pairs. There was a lack of association in the scores of opposite sex twin pairs. The authors observed that the rate of agreement between sibling and twin pairs does not necessarily indicate the validity of the measure. They argued that, in addition to actual parental behaviour, the PBI scales may be subject to a range of intra familial processes such as sibling competition, and contrasting evaluations of parents by respondents. It may also be the case that parents' actual behaviour differs between individual offspring therefore a lack of agreement in the ratings given by twins or siblings would not be interpretable as discrepancy in perceived and actual parental behaviour.

Parental bonding and psychopathology

Continuity of attachment predicts that impaired attachment relationships in childhood lead to difficulties in interpersonal relationships in adulthood (Waters *et al.*, 2000). There is evidence for insecure attachment in BPD (see Dozier, Stovall-McClough & Albus, 2008). In a review conducted by Agrawal and colleagues (2004) thirteen studies employed seven different

measures including interview, self-report and projective methods. The authors concluded that, in spite of the variation, there was a consistent association between borderline personality disorder and 'unresolved' attachment style on the interview measure, and the corresponding 'fearful' attachment style on the self-report measures. There is evidence that, where only three categories are employed, the pre-occupied category is assigned to the highest proportion of a group of participants with BPD (Fonagy *et al.*, 1996; Rosenstein & Horowitz, 1996; Stalker & Davies, 1995). However, where the unresolved classification is added, the majority of people with BPD are assigned to this category (Barone, 2003; Diamond *et al.*, 2003; Stovall-McClough & Cloitre, 2003).

Zanarini (2000) described several studies of parental separation and loss or disturbed parental involvement in a conceptual review of the association of childhood experiences and BPD. She observed that prolonged separation from parents in childhood is a common and discriminating factor in BPD. Absence and lack of involvement of a father was also a discriminating factor (Zanarini, 2000). However, it has been argued that separation is not a risk factor, provided that quality of parenting received by the child is not affected (Parker *et al.*, 1992). In examining studies which investigated a range of risk factors for BPD in childhood experiences, Zanarini (2000) found that sexual abuse by a male non-caregiver, in the context of abuse and neglect by both parents was the most typical presentation. Zanarini concluded that the evidence suggests a multifactorial basis for BPD involving 'innate temperament, difficult childhood

experiences and relatively subtle forms of neurologic and biochemical dysfunction (which may be sequelae of these childhood experiences or innate vulnerabilities') (Zanarini, 2000, p. 98-99).

Specifically regarding parental bonding, Zanarini (2000) observed that patients with BPD perceived their relationships to their mother as distant, conflictual, or overprotective. This is consistent with Masterson's (1976) theory that BPD is predisposed by overinvolved mothers preventing autonomous development by selective withdrawal of availability during the separation-individuation phase of development. Alternatively, neglect, deprivation and lack of parental care has been implicated as the precursor for BPD (Adler, 1985; Guntrip, 1969). Adler (1985) argued that an 'inadequate holding environment in childhood leads to affective instability and impulsivity later in life' (Zweig-Frank & Paris, 1991). Importantly, disturbed relationships with *both* parents may be a more specific factor than problems with either in the pathogenesis of BPD (Adler, 1985; Zanarini, 2000).

Previous reviews of parental bonding

The author is not aware of any previous systematic literature reviews of the PBI in BPD. Parker (1990) observed that, although the PBI had been employed by a variety of studies to investigate a range of populations, there were not yet sufficient findings in any one group for meaningful synthesis. In a related area, Parker, Barrett and Hickie (1992) conducted a literature review to examine the association between perceptions of parental behaviour in childhood and social bonds in adulthood. In order to explore the continuity

hypothesis, they reviewed studies that had investigated the link between PBI scores and measures of adult social networks or measures of intimate relationships. Their findings appeared contradictory: strong positive correlations were observed between perceived parental bonding and various measures of social support yet there was no link between PBI scores and a measure of intimate relationships (Parker *et al.*, 1992). They observed that methodological factors may have biased the results of the studies, for example, the use of measures of intimate relationships excluded all participants not in relationships (Parker *et al.*, 1992). They suggested that the failure to form close relationships demonstrated the continuity of insecurity of attachment (Parker *et al.*, 1992). Also, participants were either drawn from non-clinical populations, or were depressed patient samples (Parker *et al.*, 1992). The review concluded that early socialisation experiences shape later interpersonal interaction, but may be modified by later relational experiences (Parker *et al.*, 1992).

Objectives

After examining previous literature reviews of the role of parenting behaviour and attachment in BPD, it became clear that there was scope for narrower consideration of studies in this field. An exploratory literature search of self-report measures for attachment relationships revealed that the measure most frequently used with BPD samples was the Parental Bonding Instrument (PBI) (Parker *et al.*, 1979). This review examines the measurement of perceptions of parental behaviour in BPD. The aim of this review was to evaluate the use of the Parental Bonding Instrument in people

with borderline personality disorder and to compile the findings of studies that have explored perceived parental behaviour in BPD.

Literature Search

Selection Criteria

In the initial stages of the literature search, the main criteria for inclusion were that an attachment-related self-report measure had been administered to people with borderline personality disorder. For reasons outlined below, the search was refined by the development of the following inclusion and exclusion criteria:

Inclusion Criteria:

- A sample of participants recruited from the BPD population
- The administration of the PBI
- A comparison group
- English language

Exclusion Criteria:

- Participants aged less than 16 years

On examination of the studies that had met the broad inclusion criteria it was observed that the number of studies applying any given self-report measure of attachment was small. The PBI was the only measure that had been administered to people with BPD in more than ten studies. At this point

it was decided to limit the review to include only studies that had employed the PBI.

Initially, all studies that included participants with BPD were included, regardless of whether there was a priori assignment to a BPD sample, or reporting of results relating to a BPD subgroup within samples drawn from other populations (e.g. major depression, forensic patients or prisoners). Whilst this did not mean that the results were not of relevance, a number of issues were noticed that called in to question the studies' appropriateness for inclusion. For example, it was not always clear how the BPD subgroup had been selected and PBI results for those with BPD were frequently reported incompletely. Given that the number of references was rather low at this stage these were initially retained for inclusion. However, as the search progressed, an adequate range of studies was found. In order to further refine the search and allow for clarity of interpretation, studies that did not include a discrete BPD sample were excluded.

Given that an exploratory search of the literature had indicated that there were a small number of references relating to studies of parental bonding in BPD it was decided that restricting the date range would needlessly limit the number of articles obtained. Also, as stated above, the use of the PBI in people with BPD has not been previously reviewed. Therefore the search was conducted to include studies to date since the development of the PBI in 1979.

Search Strategy

A systematic literature search was conducted in May 2010 using the following databases: Assia, Cinahl, Embase, Medline, PsychInfo, Web of Knowledge, and Zetoc. Databases were searched within the date range 1979 to present. The search was restricted to English language references, and included unpublished work within the databases where available. The initial search strategy was devised for the Medline database, and then adapted where necessary for the other databases. Searches were performed for the subject headings and keywords: 'Borderline Personality Disorder'; 'Borderline Personality'; 'Borderline State'; 'Parental Bonding; Attachment'; 'Object Attachment'; 'Attachment Behaviour'; 'Emotional attachment'; 'Self-report'; and 'Questionnaire'. As explained above, the initial search strategy had been designed to obtain a broad range of references to studies of adult attachment in all types of relationships, using any self-report attachment measure. To ensure that all relevant articles were located, the search strategy included keyword searches of specific self-report attachment measures listed by Ravitz, (2010). The final reference list from each database was exported to the Endnote X1 referencing software package (Thompson Reuters, 2007). The separate lists were combined within Endnote and duplicates were removed at this stage. Twenty-seven articles and one thesis were obtained from journals stored at University of Edinburgh library; internet sources of full-text articles; and the Inter-library Loans Service. Two additional theses (Austin, 1998; Johnson, 1999) had been identified as studies for potential inclusion in the review from their titles and

abstracts. However, both were excluded following unsuccessful efforts to obtain copies via Inter-library loans, the authors and awarding institutions.

In order to minimise publication bias and obtain references that were not obtained from within the databases, a keyword search ('parental bonding' AND 'borderline personality') was conducted using the internet search engine Google (2010). This search found 2,030 webpages, the author examined the first fifty of these and found three additional references to journal articles that were potentially eligible for inclusion. These were obtained and one study met the inclusion criteria for the review (Machizawa-Summers, 2007); one was a national study of perceptions of parental bonding in psychiatric disorders, but did not include people with BPD, (Enns, Cox & Clara, 2002); and one was a review (Zanarini, 2000). Six references were obtained from examination of the reference lists of relevant articles: three of which were included in the final set for the review (Goldberg *et al.*, 1985; Paris & Frank, 1989; Zweig-Frank & Paris, 2002). One study was excluded as it had not used the PBI (Gunderson, Kerr & Englund, 1980). Two studies (Carter *et al.*, 1999; Modestin, 1998) had administered the PBI to participants with BPD and were initially included in the review, however both were removed due to the lack of a specified BPD sample.

Selected Studies

Description of the studies

Fourteen studies were selected for inclusion in the review, see Table 1 below. The final set comprised thirteen peer reviewed journal articles and

one unpublished thesis (Misencik, 2001). The studies under review dated between 1985 and 2007. They report findings from the administration of the PBI to samples in six countries, across three continents: Canada (7), Italy(1), Japan(1), Norway(2), the UK(1) and the USA(2).

The total number of participants from all studies was 1,700; 501 of whom had been assigned to a BPD group. Patient samples were recruited from a range of university, hospital and community mental health services, and included both inpatients and outpatients. Participants for the non-clinical control groups were health service employees, university students, community members and people responding to public advertisement. A variety of comparison groups were used in the studies included within this review: anorexia nervosa; schizophrenia; dysthymia; Cluster A, B or C personality disorders; personality disorder not-otherwise-specified (PD-NOS); no personality disorder (i.e. mixed clinical samples of patients diagnosed with axis I psychiatric disorders); no BPD; and no history of psychiatric disorder. Six studies used mixed samples of male and female participants, seven used only female participants and one used only male participants. One study did not state the gender of the sample. The youngest mean age of a BPD sample was 23.0 years and the oldest was 50.9 years, however this was a sample of participants in a long-term follow-up study. Excluding this study, the oldest BPD sample mean age was 39.6 years. The mean ages of the comparison groups ranged from 21.0 years to 46.2 years. None of the studies recruited participants younger than 16 years of age.

All of the studies administered the original 25-item version of the PBI. All but one of the studies applied both the maternal and paternal scales of the PBI: Misencik (2001) administered only the maternal scale. Thirteen of the studies used the original two-dimensional scoring system by Parker *et al.* (1979); two of these studies also reported the parenting styles categories calculated from the continuous data. One study (Laporte & Guttman, 2007) used the three-dimensional scoring method.

Methodological qualities of the studies

To facilitate the meaningful interpretation and application of results, the studies' methods were systematically evaluated, as is recommended by guidelines on conducting literature reviews (Scottish Intercollegiate Guidelines Network, 2008). An overview of the methodological qualities of the studies is presented in Table 2. The key methodological variables were identified by the author from the literature base identified during the searching stage. A rating system was devised in order to provide a succinct and accessible summary of the studies performance on each of the variables. To ensure that the studies were appraised fairly and consistently, an assessment guide was prepared by the author in advance of the evaluation (Table 3).

The majority of the studies relied on small sample sizes: five used a number of participants that made them insufficiently powered to detect an effect size of $d = 0.5$; seven had sufficient power to detect a large effect ($d = 0.8$); and two were sufficiently powered to detect a moderate effect size

($d=0.5$). Eight of the studies used a consecutive sampling method in the recruitment of participants; seven used opportunistic sampling or did not state their sampling method. None of the studies recruited participants using random sampling. Eight studies stated that the experimenter administering the PBI, or other measures, were blind to diagnosis. Seven of the studies used a degree of matching or statistical procedures to control for variables such as age and gender. Many of the studies were vague in their description of the families of their participants, and did not clearly report whether there was a prolonged separation from, or loss of one or both parents, (for example as a result of parental separation, fostering/adoption or death). Similarly, most studies did not comment on the presence of step-families.

Half of the studies used a validated, structured or semi-structured interview for the purpose of diagnosing BPD, primarily the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)(First *et al.*, 1997) or the Diagnostic Interview for Borderlines (DIB)(Gunderson, Kolb & Austin, 1981). The retrospective version of the DIB, which is conducted by case note review rather than interview, was used within three studies. Two studies did not use any form of validated diagnostic assessment, relying on clinical judgement. Only five of the studies examined the inter-rater reliability of their diagnostic assessment: four of these reported excellent agreement and one reported slightly lower but still substantial agreement. Most of the studies did not assess the validity of the assigned diagnoses. None of the studies tested the construct validity of the PBI scales.

Four of the studies examined the internal consistency of the PBI using Cronbach's alpha (Fossati *et al.*, 2001; Laporte & Guttman, 2007; Machizawa-Summers, 2007; Misencik, 2001). Three studies reported excellent internal consistencies for the four original scales: maternal care $\alpha = 0.90$ to 0.91 , paternal care $\alpha = 0.91$ to 0.93 , maternal protection $\alpha = 0.86$ to 0.88 and paternal protection 0.83 to 0.85 . Internal consistency was slightly lower when the three factor model was used: $\alpha = 0.76$ to 0.92 (Laporte & Guttman, 2007). The remainder of the studies had not analysed the internal consistency of the PBI within their sample, no study reported less than excellent internal consistency. None of the studies included in the review used repeat administration of the PBI, therefore the test-retest reliability of the measure in people with BPD cannot be reported here.

Results

It was not possible to conduct a meta-analysis of the results of the studies for the following reasons: (1) the small number of studies; (2) the variety in clinical comparison groups and the small number of non-clinical comparison groups used across the fourteen studies resulted in there being insufficient samples drawn from similar population to enable meaningful comparison; (3) the inadequate reporting of summary statistics and (4) the presence of alternative PBI scoring methods. The means and standard deviations for the PBI scores of the samples from all studies are presented in Table 4, and the effect sizes and observed power have been calculated for

the purposes of the review (see Table 5). The findings of the review are presented below and are organised according to type of comparison group.

Comparison of Parental Bonding in BPD and other populations

BPD vs Normative data

Byrne and colleagues (1990) were interested in the difference between the childhood life events reported by people with BPD and schizophrenia. Their study did not include a non-clinical group, instead they compared the PBI scores of both groups to Parker's (1983) general practice 'normal' samples (Vermont). This was the only study in the review which used this normative data. In addition to the PBI, they developed and administered the Childhood Life Events and Family Characteristics Questionnaire (Byrne *et al.*, 1990). They reported that patients with BPD scored significantly lower for maternal care and paternal care; and significantly higher than the 'normal' sample for maternal protection and paternal protection, (Byrne *et al.*, 1990).

BPD vs non-clinical

The earliest of the studies to compare parental bonding in BPD to non-clinical participants was Goldberg and colleagues (1985), who were specifically interested in parental qualities as an antecedent of BPD. They compared the PBI scores of non-clinical participants, psychiatric patients without personality disorder and patients with BPD. The authors reported a significant interaction between diagnosis and parenting styles on an analysis of covariance (Goldberg *et al.*, 1985). Participants with BPD perceived both

parents to be less caring and more overprotective than the non-clinical controls. Their results also indicated that depression did not affect the PBI scores of the patients in all groups (Goldberg *et al.*, 1985).

Fossati and colleagues (2001) were interested in the theory that BPD pathology arises following severe disturbance in early relationships that lead to insecure attachment and disruption of capacity to represent mental states (Fonagy, 1991). They argued that if this were the case, it would be expected that there would be significant differences in temperament and character, after attachment was controlled for (Fossati *et al.*, 2001). Their study investigated the association between temperament, character and borderline personality disorder; employing the Attachment Style Questionnaire (ASQ) and PBI to control for the effects of attachment patterns. The study compared samples of patients with BPD; cluster B personality disorder (non-BPD); cluster A or C personality disorders; psychiatric patients without personality disorder; and non-clinical participants drawn from the community. According to Dunn-Bonferroni contrasts of the PBI scores in all samples, perceived paternal and maternal care was significantly lower in the BPD sample than in the non-clinical sample (Fossati *et al.*, 2001). Similarly, perceived paternal and maternal protection were both reported as significantly higher by BPD patients than by non-clinical participants (Fossati *et al.*, 2001). In addition, they found that the BPD group differed significantly from all comparison groups on 'novelty seeking' and 'cooperativeness' on measures of temperament and character, even when attachment and parental bonding were controlled for; and that attachment did not mediate

these effects (Fossati *et al.*, 2001). They concluded that temperament has a role in the development of BPD (Fossati *et al.*, 2001).

Guttman and Laporte (2002) compared the retrospective perceptions of parents and daughters of families in which the daughter was diagnosed with BPD, Anorexia Nervosa (AN) or no history of psychiatric diagnosis. As part of a more extensive study, all of the daughters and parents participated in a semi-structured individual interview and were administered a series of self-report measures; including the PBI and the Self-Report Family Inventory (SFI), (Beavers, Hampson & Hulgson, 1990). Guttman and Laporte (2002) were interested in examining the level of agreement between daughters and their parents, as well as the differences between the three groups. They described several variables that may contribute to disagreement of family members, including: stage of development, gender, accuracy of memory and mental illness (Guttman & Laporte, 2002). They believed that understanding the differences in perceptions of various family members has useful applications in clinical practice. The study found that women with BPD reported significantly lower care ratings for both parents, and significantly higher ratings of maternal protection than the comparison groups. Paternal protection was scored highest by the daughters with BPD, but this was not statistically significant (Guttman & Laporte, 2002). The study also found that there was a high level of disagreement in the perceptions of family members in families of women with BPD, suggesting that the disagreement was a marker for the chaos and lack of cohesion in such families (Guttman & Laporte, 2002).

In a similar study, Laporte and Guttman (2007) measured perceived parental behaviour in women with BPD, AN and no psychiatric diagnoses. In contrast to their earlier study, they used the three-factor scoring method (Cox *et al.*, 2000) and compared the groups using analysis of variance. They were able to replicate the findings of their previous study. They found that participants with BPD rated both parents as significantly less caring than non-clinical participants (Laporte & Guttman, 2007). The BPD group also rated both parents significantly higher on the denial of behavioural freedom and denial of psychological autonomy scales (Laporte & Guttman, 2007). They also performed a logistic regression analysis, and found that lack of maternal care; and lack of care combined with denial of behavioural freedom in paternal bonding, were predictive of BPD (Laporte & Guttman, 2007).

Helgeland and Torgersen (1997) were specifically interested in perceptions of maternal bonding in schizophrenia, following theories that maternal insensitivity to developmental needs, over vigilance and rejection contribute to the development of the disorder. They did not assess perceptions of paternal bonding. Their comparative study analysed the differences between the maternal care and protection PBI scores in BPD and schizophrenia; and in schizophrenia and non-clinical presentations; but did not compare the scores of those with BPD to the non-clinical group. The means and standard deviations of all three samples were reported: maternal care was rated as lower in the BPD sample than in the non-clinical sample and maternal protection was rated higher by participants with BPD than by those with no psychiatric diagnosis. The authors also report distribution of

the participants' perception of maternal style across four categories: 92.9 percent of the BPD sample assign their mother to the 'affectionless control' style (representing high protection and low care) compared to 20 percent of the non-clinical sample. The statistical significance of these findings was not reported.

BPD vs non-BPD psychiatric patient

In a previously described study, Goldberg and colleagues (1985) included a comparison group of psychiatric patients who were not diagnosed with any form of personality disorder. They found that both parents were perceived as less caring and more overprotective by participants with BPD than by those without personality disorder in an analysis of covariance where there was a significant parental style by diagnosis interaction (Goldberg *et al.*, 1985). The authors commented that their finding contradicted the results of a previous study that had found that low parental care or neglect, but not protection, were associated with BPD (Frank & Paris, 1981). The earlier study had assessed recollections of family experience using semi-structured interview. Goldberg *et al.* (1985) concluded that the structure afforded by the formal self-report measure was more reliable than the interview format, and allowed for more accurate evaluation of the competing hypotheses of overprotective mothering (Masterson, 1976) and neglect and deprivation (Guntrip, 1969).

Paris and Frank (1989) were also interested in examining the association between either neglect or overprotection and BPD. In a similar study, they found that perceived maternal care was significantly lower in the

BPD group than the non-BPD group, paternal care scores were also lower for participants with BPD, but this difference was not significant. It should be noted that participants were drawn from female university students in psychotherapy, and the sample is therefore likely to be highly selected. A later study by the same authors (Zweig-Frank & Paris, 1991) administered the PBI to male and female patients with and without borderline personality disorder, attending either a hospital psychiatric unit or university mental health clinic. In a four-way ANOVA, for the care subscale, the main effect of diagnosis was highly significant: both male and female patients with BPD perceived their parents as less caring than the patients without BPD. Male patients across both groups perceived their mothers as significantly more caring than fathers. In the ANOVA for the protection subscale the main effect of diagnosis was also highly significant: patients with BPD perceived their parents as more protective than the patients without BPD. None of the interactions were significant. In both studies the authors claimed that their results supported the theory of biparental failure in the development of BPD (Adler, 1985).

Machizawa-Summers (2007) compared perceived parental bonding in female psychiatry outpatients with and without BPD. The study was conducted in Japan, and aimed to examine whether the predictors of BPD found in North America were also present in a Japanese sample. The study found that women with BPD rated both parents as significantly less caring and more protective than the women without BPD (Machizawa-Summers, 2007). In a subsequent regression analysis, the study also found that

paternal overprotection was predictive of BPD, along with emotional abuse and neglect (Machizawa-Summers, 2007).

BPD vs no personality disorder

Torgersen and Alnaes (1992) aimed to expand on the findings of Frank and Paris (1989) by exploring perceived parental bonding in participants with BPD, Schizotypal personality disorder, other PD and no PD. They observed that the DIB used in the earlier study did not adequately discriminate BPD from schizotypal PD, and therefore used the Structured Interview for DSM-III axis II personality disorders (SIDP). In comparison to participants with no personality disorder, the participants with BPD reported significantly higher parental protection, and lower parental care (Torgersen & Alnaes, 1992). A similar study, (Fossati *et al.*, 2001), introduced above, included a group of participants who were psychiatric patients without personality disorder. They found that the parental care was reported as significantly lower by the BPD group. Although protection scores were higher for both parents in the BPD group, there was no significant difference between the two groups on the overprotection scales (Fossati *et al.*, 2001).

BPD vs other personality disorders

Following their earlier comparative studies, Paris and Zweig-Frank examined the role of perceived parental bonding within the context of a broader set of psychological risk factors for BPD, including: childhood sexual abuse (CSA), physical abuse, loss, separation and parental bonding. Paris *et al.* (1994) explored the role of a range of psychological risk factors in

borderline personality disorder using a developmental interview and the PBI. They compared female patients with BPD to those with other forms of personality disorder on the presence of psychological risk factors. The study found that perceived maternal care was rated significantly lower by women with BPD than the non-BPD group (Paris *et al.*, 1994). They also found that rates of CSA were significantly higher in the BPD group than the non-BPD group. In a multivariate logistic regression performed with physical abuse, CSA, and the PBI scales, only CSA discriminated for BPD. In a subsequent study of male patients with personality disorder, Paris *et al.* (1996) assessed hostility, defence style and psychological risk factors in men with borderline personality disorder compared to men with other forms of personality disorder. They did not report any statistical analysis directly comparing the PBI rating scores of the two groups. Maternal control was significantly associated with defence style, and both parental control subscales were significantly associated with hostility (Paris *et al.*, 1996).

Torgersen and Alnaes (1992) administered the PBI to participants with BPD, schizotypal personality disorder, other PD and no PD. Participants with BPD reported lower maternal care than those with other PDs, and no PD, and lower paternal care than participants with no personality disorder. Maternal and paternal protection was perceived as higher by participants with BPD than those with schizotypal personality disorder and no personality disorder. When the scores were used to assign participants to the parenting styles categories, parents of those with BPD were predominantly represented within the 'affectionless control' category; the 'neglectful parenting' category

was most commonly assigned to the schizotypal PD group; and 'optimal parenting' was most frequently assigned in those without any personality disorder. Additionally, although none of the interactions were significant, the effect of gender was significant for maternal care: males rated their mothers as more caring than females (1992).

Misencik (2001) was interested in clinging and distancing defence mechanisms that serve to reduce anxiety arising from fear of abandonment and engulfment respectively. As part of her doctoral thesis, Misencik (2001) explored the association between these fears and defence strategies, and perceived parental behaviour. There was a strong positive correlation between fear of engulfment and parental overprotection, and strong negative associations between care and both abandonment and engulfment (Misencik, 2001). PBI scores were not associated with defence strategy (Misencik, 2001). She compared parental bonding in BPD and PD-NOS using the PBI. The study found no significant difference between the two groups scores for maternal care and protection (Misencik, 2001). The author observed that the nature of the PD-NOS diagnosis is that it is given to people who demonstrate diagnostic features of more than one personality disorder, so that it is likely that this group could share the traits of the BPD group, without having a diagnosis of BPD (Misencik, 2001).

BPD vs Schizophrenia

Two of the studies compared parental bonding in BPD and schizophrenia, (Byrne *et al.*, 1990; Helgeland & Torgersen, 1997). Byrne and colleagues (1990), described above, had hypothesised that people with BPD

would report more abnormalities in psychosocial issues than people with schizophrenia. They found that, in comparison to the participants with schizophrenia group, the BPD group reported significantly more early maternal separation; paternal criminality; physical and sexual abuse in childhood (Byrne *et al.*, 1990). Regarding the PBI, they found maternal care to be significantly lower in the BPD group, and paternal protection was significantly higher in BPD than in schizophrenia, (Byrne *et al.*, 1990). There was no significant difference between the two groups on either maternal protection or paternal care.

Helgeland and Torgersen (1997) compared maternal bonding in participants with BPD and schizophrenia on both the continuous two-dimensional and the categorical scoring frameworks. They reported that although the mean score for the maternal care dimension was lower in the BPD group, this difference was not statistically significant. There was no significant difference between the two groups for maternal protection. When the scores were used to assign participants to the four maternal style categories 92.9 percent of participants with BPD were assigned to the 'affectionless control' category, compared to 68.4 percent of those with schizophrenia. The authors reported that this was not statistically significant. Most of the remainder of the schizophrenia group (26.3 percent) were assigned to the 'neglectful parenting' category, whilst none of the BPD group were represented by this parenting style (Helgeland & Torgersen, 1997).

BPD vs Dysthymia/Depression

Patrick and colleagues (1994) investigated the role of mental representation of early social experience in personality disorder by comparing female patients with BPD to those with dysthymia, using the Adult Attachment Interview and the PBI. They also administered the Beck Depression Inventory (BDI) in order to examine the impact of current mood on responses to both measures. In comparison to women with dysthymia, female patients with BPD reported significantly lower maternal care, and significantly higher maternal over-protection. The mean paternal care score was lower in the BPD group than in the dysthymia group, and the mean paternal protection score was higher in the BPD group, however, neither of these differences was significant (Patrick *et al.*, 1994).

BPD vs Anorexia Nervosa samples

Two studies, described above, compared perceptions of parental bonding in BPD and AN, (Guttman & Laporte, 2002; Laporte & Guttman, 2007). Guttman and Laporte (2002) reported that the PBI ratings of parental care and protection by women with AN were congruent with those of non-clinical groups. Women with BPD reported less parental care and more parental protection than those with AN, however, only the difference in paternal care was significant in the analysis of variance (Guttman & Laporte, 2002). The second study by the same authors used the PBI's three-factor scoring method in a comparison of perceived parental bonding in AN, BPD and non-clinical groups. The study found that maternal and paternal care was perceived as significantly higher in the AN group than the BPD group;

and denial of behavioural freedom was rated significantly higher by those with BPD than AN, (Laporte & Guttman, 2007). The difference between the BPD and AN group on the denial of psychological autonomy scale was not significant.

Discussion

Summary of Research Findings

Overall, people with BPD perceive both parents as less caring, and more protective than non-clinical groups. All but one of the studies that compared BPD and non-personality disordered psychiatric patients also found a significant difference in these directions. The most robust findings were obtained for the maternal care scale of the PBI, which distinguished participants with BPD from those with dysthymia, schizophrenia and anorexia nervosa, in addition to non-clinical and non-PD groups. Effect sizes tended to be smaller, or non-significant for the maternal overprotection scale for comparisons to other psychiatric disorders. Although paternal care was consistently perceived as lower by participants with BPD than non-clinical participants, the findings were less definitive than for the maternal care scale. Comparisons to mixed psychiatric disorder and other personality disorder groups yielded contradictory findings; although some studies demonstrated significant differences, these were not supported across the reviewed studies. There were no significant differences between BPD and schizophrenia or dysthymia on this scale. However participants with anorexia nervosa scored their fathers as more caring than those with BPD.

There was little examination of gender differences in perceived parental bonding. Of the two studies that investigated gender as a subgroup, there was an indication that males tended to rate their mothers higher on care than female respondents. There was no evidence, from any of the studies, for an interaction between diagnosis and gender. Parker *et al.* (1979) stated that there was no difference in perceived parental bonding reported by males and females. However, the findings of studies included in this review suggest that there are potentially differences between the sexes in perceived parental bonding within psychiatric patient samples.

Parker (1983) states that although the PBI is a measure of a person's perception of their parents during childhood there is evidence that the rating accurately reflects the parent's actual behaviour. However, Guttman and Laporte (2002) found that whilst the perceptions of parents and daughters were congruent in families without a history of psychiatric diagnosis; the perceptions of daughters with BPD differed significantly from those of both parents. They noted that agreement between the family members in the families of members with BPD was very low, and often perceptions were 'diametrically opposite'. They suggested that this may reflect the chaos and lack of cohesion frequently described in such families (Guttman & Laporte, 2002). It may be that the discrepancy in perceived behaviour of the parent between family members partially reflects difficulties present in the attachment relationship.

Methodological Quality of Research

Sampling and recruitment

This review has highlighted a number of issues surrounding sample sizes, and sampling methods. Five of the studies reviewed had insufficient numbers of participants to detect a large difference between groups, and only two recruited enough participants to detect a medium effect size. Estimates of statistical power suggest that many of the studies that did not obtain significant effects used samples that were too small. Therefore their findings that there were no differences between the groups on the PBI scales are not conclusive. The lack of statistical power in some of the studies may in part explain the discrepancy between them, particularly with respect to the paternal scales. Given the theoretical stance discussed above, it is conceivable that people with BPD do perceive their fathers as less caring and more protective than those with other types of personality disorder, other psychiatric diagnoses, non-clinical participants; but that the size of the difference is smaller than on the maternal scales. Certainly, the difference between the groups tended to be smaller in paternal scores, even where the difference was significant. So although most of the studies have observed the large difference between the BPD groups and non-clinical groups, where the difference is less marked, for example between people with BPD and people with other personality disorders, the chance of the difference being observed in each study is reduced.

Sampling methods used by the studies also tended to be less than ideal. Half of the studies did not report their sampling strategy, those that did

relied upon consecutive sampling, and none of the studies stated that they had used a random sample. Whilst this is accounted for by the practical issues of recruitment and retention of participants with severe and enduring psychiatric problems, it does impact upon the generalization of findings. In addition, very few of the studies indicated response and drop-out rates, or commented on sources of bias in the selection of participants. Potentially, the samples in the reviewed studies may be highly selected. To illustrate, where the participants were recruited within mental health services by therapists and psychiatrists with experience of working with them as patients, several factors may potentially have affected selection, including: knowledge that the patient was well enough to participate; and opinions about the effect of participation. Furthermore, the samples are likely to be biased by patient factors, for example, there are likely to be a lower proportion of participants with avoidant personality traits. Of course, in the studies that administered the PBI to all consecutively admitted in-patients, this is unlikely to be an issue. The difficulty with many of the studies under review is that they lack information required to assess potential sources of bias.

Diagnostic Issues

The method of diagnosis of BPD in participants was variable across the studies. Half used a structured clinical interview such as the Structured Clinical Interview for DSM, Axis II disorders (SCID-II) or a semi-structured interview such as the Diagnostic Interview for Borderlines (DIB). However, interviews are much more time consuming than screening, and may often be impractical. Lengthy assessment also places constraints on the number of

participants that can be included in a study. Therefore, use of valid and reliable diagnostic tools appears to be a strength of the studies reviewed. Five of the studies relied upon case note review in assigning participants to diagnostic groups. It is arguable that personality disorder is no longer thought of as a life-long diagnosis, there is evidence that some people diagnosed as having BPD, no longer meet the criteria when re-assessed after six years (Zanarini *et al.*, 2003). Therefore it is important to ensure that diagnosis is current. Two of the studies did not clearly state how participants' diagnoses had been made. Additionally, less than half of the studies attempted to verify the reliability of the diagnosis. Of those that measured inter-rater reliability in a subset of participants, most reported good to excellent agreement. Furthermore, several of the studies used only BPD specific screens, and therefore did not assess participants in the BPD groups for other personality disorders.

Reliability and validity

Only a small proportion of the authors assessed the PBI for reliability and validity in their study. Whilst it is known from previous research that the measure is reliable and valid in non-clinical populations (Parker, 1983) this does not yet appear to have been satisfactorily demonstrated for the all of the populations under consideration here.

Predominant use of the continuous, two-dimensional scoring system was observed throughout the studies, with the exception of Laporte and Guttman (2007). This is notable, in the face of evidence for the superiority of the three-dimensional models (e.g. Sato *et al.*, 1997). However, more

remarkable, given the ongoing debate, is that none of the studies tested the factor structure of PBI in the responses from their samples. This would have been useful in testing the competing models, as well as exploring the construct validity of the PBI within the various patient groups.

Extraneous variables

The PBI is designed to assess an individual's perception of their parents during childhood, and therefore is hugely influenced by periods of separation, absence or loss of a parent (i.e. death, separation or divorce, fostering or adoption). Many of the studies did not state whether they had assessed participants for these factors; whether they had controlled for these factors by excluding participants whose parents had not been present until they were 16 years old; or explore the role of these factors in the analysis. It is necessary that these factors are taken into consideration because they are highly likely to contribute to perceptions of parental behaviour (Zanarini, 2000). Similarly, many of the studies do not account for known risk factors for BPD, such as childhood trauma and abuse (National Collaborating Centre for Mental Health, 2009). When these variables were examined it was found that only CSA was predictive of BPD (Paris *et al.*, 1994). In order to obtain generalisable findings, it is necessary to minimise variation in these extraneous variables, by specifying relevant exclusion criteria. However many factors, such as childhood experiences of neglect and abuse, are themselves implicated in the development of BPD (Zanarini, 2000). Overly restrictive exclusion criteria could result in highly selected samples. For example, limiting participation to individuals who lived with both parents until

age 16 years may obtain a sample that is representative of a more specific subgroup than is desired. It is therefore important that this is addressed by research to explore the contribution of a range of variables to the development of BPD.

Limitations of Review

The variety of groups used in the studies reviewed limits the conclusions that can be drawn regarding perceived parental bonding in BPD in comparison to other groups. For example, groups comprising participants with other clinical presentations, or drawn from populations where there is no history of mental health problems or personality disorder. Often there have been only one or two studies to compare PBI scores for people with a specific psychiatric diagnosis to people with BPD. Without accurate replication of these initial findings it is not possible to state whether or not these differences are present across the wider population. As so few of the studies have used equivalent comparison groups, it has not been possible for this review to collate results. Therefore, the current review is limited to a narrative discussion of findings.

This review was completed in part fulfilment of a programme of education, and was therefore conducted by a single reviewer, with input from others being restricted. Therefore, it was not possible for the systematic literature search to be verified by an independent reviewer. However, every attempt was made to ensure objectivity, for example by assessing the methodological quality of the studies according to pre-specified criteria. In

addition, the review was not funded, and this had several implications, such as: the author was unable to obtain two studies that may have been included in the review due to their prohibitive cost; and there was no capacity to pay for translations of articles written in languages other than English, which may have been relevant for inclusion in the review. In restricting the review to English language articles, the range of cultures represented in the review has been limited.

Author's Conclusions

There is evidence from the reviewed studies that borderline personality disorder is associated with perceived low care and high protection from both parents. The most consistent findings were for lower maternal care, and higher maternal protection perceived by people with BPD in comparison to non-clinical controls. A similar pattern was observed for perceived paternal bonding, however, the difference in scores between the BPD groups and non-clinical groups tended to be smaller. These findings indicate that parental neglect and deprivation (Guntrip, 1969) together with overprotection and restricted autonomy (Masterson, 1976) are implicated in BPD. In addition, the findings support the view that biparental failure is of aetiological significance (Adler, 1985). However, there is evidence for discrepancy in reports of parental behaviour by different family members in BPD groups (Guttman & Laporte, 2002), and it should therefore be observed that perceived parental bonding may not accurately represent reality.

Although there were a number of consistent differences in the PBI scores of BPD groups compared to specific psychiatric diagnoses, there were too few instances of each comparison group to allow meaningful conclusions to be drawn. Comparisons to other personality disorders were similarly inconclusive. Therefore, at present it must be concluded that whilst perceived parental bonding appears to be a risk factor for BPD, it does not necessarily discriminate from other personality disorder diagnoses. This finding is consistent with the view that the developmental pathology of BPD is complex and multi-factorial (Zanarini, 2000).

Implications for research

The present review focused upon comparative studies, and did not aim to examine the role of perceived parental bonding in predicting BPD diagnosis. The author is aware that the PBI has been applied within studies of contributory factors to BPD (Paris *et al.*, 1994), however, as yet there are insufficient numbers of such studies. Future research should focus upon the relative contribution of parental bonding to development of BPD. In addition, given the lack of clear differences between BPD and other PDs in perceived parental bonding, it may also be fruitful to further investigate the profiles of risk factors across various types of personality disorder.

However, if the role of parental behaviour is to be examined as a risk factor for the pathogenesis of BPD, then it is first necessary to address the issue of its validity as a measure of actual childhood experience. Parker (1983) stated that the PBI was a measure of perceived parental bonding,

and that it could not be presumed to be accurate as a historical account of parental behaviour. Although initial studies in non-clinical populations indicated that perception corresponded to experience of parenting behaviour (Parker, 1983), this review has highlighted evidence that this is not the case in BPD samples (Guttman & Laporte, 2002). It would be interesting to know more about the discrepancy in perceived parental bonding by people with BPD and their parents and siblings; and why this differs from other groups.

Several methodological issues were identified in previous studies, and these should be addressed within future research. Firstly, there is a need for better recruitment strategies to ensure that representative samples are obtained. Secondly, valid and reliable diagnostic measures should be included to assess participants in all comparison groups. Thirdly, sample sizes should be sufficiently large. Finally, there should be further examination of the factor structure of the PBI within various clinical groups.

Implications for practice

The findings collated by this review add support to the mounting evidence base for the association between early relational experiences and psychopathology in adulthood (e.g. Zanarini, 2000). There is a need for mental health services to be cognisant of the role of early childhood experiences and the effect of these upon interpersonal and psychological functioning. An assessment that includes a history of relationship experiences throughout life results in a richer formulation that enables in depth understanding of the development of personality, and personality

disorder. People with BPD frequently present with extreme emotional and behavioural problems that are a challenge for services, and often lead to difficulties in engagement. Understanding personality disorder at the relational level promotes a systemic approach to intervention which encourages clinicians' sensitivity to the effects of their presence within the patients' network of relationships.

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Table 1. Description of Studies

Author	Date	Group	N	Age Mean(SD)	Age Range	Gender	Recruitment	Diagnostic Assessment	Exclusion Criteria	PBI scales	PBI Scoring Method	Other Measures
Byrne <i>et al.</i>	(1990)	BPD	15	24.6 (ns)	16 to 31	M/F	Hospital Psychiatry - Inpatient and Outpatient	DSM-III criteria: Psychiatric assessment	Axis I and II Dx not associated with BPD/Sz; acute psychosis; 'mental retardation'; organic brain disorder	Mt/Pt; Ca/Pr	Cont (2d)	CLEFCQ; BPI - Denial Scale
		Sz	14	25.9 (3.3)								
Fossati, Donini and Bagnato	(2001)	BPD	44	27.6 (7.2)	ns	M/F	Hospital psychology and psychiatry - Inpatient and Outpatient	SCID-II	Sz/SzA/ SzF/dellusional disorder; IQ<75; dementia; organic brain disorder	Mt/Pt Ca/Pt	Cont (2d)	TCI; ASQ; semi-structured interview: childhood abuse
		PD: Cluster A or C	39	31.0 (8.6)								
		PD: Cluster B or BPD	98	30.4 (8.7)								
		No PD	70	30.8 (8.7)								
		Non-clinical	206	24.4 (8.8)			University students; community	None stated	None stated			
Goldberg <i>et al.</i>	(1985)	BPD	24	24.9 (6.0)	ns	ns	Hospital psychiatry - Inpatients	DSM-III criteria: Psychiatric assessment	Diagnostic disagreement	Mt/Pt Ca/Pt	Cont (2d)	ns
		No BPD	22	34.4 (12.7)								
		Non-clinical	10	28.4 (8.4)			Hospital Employees	None stated	None stated			

Table 1. Description of Studies (Continued)

Author	Date	Group	N	Age Mean(SD)	Age Range	Gender	Recruitment	Diagnostic Assessment	Exclusion Criteria	PBI scales	PBI Scoring Method	Other Measures
Guttman and Laporte	(2002)	BPD	21	32 (6.2)	ns	F	Therapists' current patients	DIB-R; SCID (ED)	AN	Mt/Pt Ca/Pt	Cont (2d)	SFI
		AN	23	22 (5.5)			Therapists' current and former out-patients and public advertisement		BPD			
		Non-clinical	25	21 (4.9)			Public advertisement	SCL-90-R; BSI; SCID (ED)	BSI/SCL-90-R outwith normal range; ED			
Helgeland and Torgersen	(1997)	BPD	14	30.9	ns	M/F	Hospital Psychiatry - Inpatient	SCID-I; SCID-II	None stated	Mt/Pt Ca/Pt	Cont (2d); Cat	ns
		Sz	19	27.9								
		Non-clinical	15	26			University students	None stated	Hx psychiatric disorder			
Laporte and Guttman	(2007)	BPD	35	31.7 (6.0)	16 to 40	F	Hospital Psychiatry - Outpatient	DIB-R; EAT	BPD and AN dual diagnosis; psychosis; organic brain disorder	Mt/Pt Ca/Pt	Cont (3d)	Semi-structured interview: family relationships in childhood and adolescence; series of unnamed self-report instruments
		AN	34	23.5 (7.0)			Eating Disorders Clinic and public advertisement	SCID (ED); BSI				
		Non-clinical	33	23.4 (7.0)			Public advertisement	SCID (ED); BSI; SCL-90-R	Hx of psychiatric disorder; ED			

Table 1. Description of Studies (Continued)

Author	Date	Group	N	Age Mean(SD)	Age Range	Gender	Recruitment	Diagnostic Assessment	Exclusion Criteria	PBI scales	PBI Scoring Method	Other Measures
Machizawa-Summers	(2007)	BPD	45	28.5 (6.5)	ns	F	Hospital psychiatry - outpatient	DSM-IV-R criteria: Psychiatric assessment; BSI	Hx psychosis; dissociative identity disorder; 'mental retardation'; organic brain disorder; epilepsy	Mt/Pt Ca/Pt	Cont (2d)	CTQ
		No BPD	45	32.9 (7.6)								
Misencik	(2001)	BPD	36	39.6 (11.3)	21 to 72	F	Community Mental Health Clinics	DIB-R (retrospective version)	Acute psychosis; 'mental retardation'; organic brain disorder; separation from mother for majority of childhood	Mt Ca/Pt	Cont (2d)	Abandonment/ engulfment questionnaire; clinging/ distancing questionnaire
		PD NOS	38	46.2 (9.1)	29 to 64							
Paris and Frank	(1989)	BPD	18	23.0 (5.5)	ns	F	University psychotherapy service	DIB (retrospective version)	Score of 5 or 6 on DIB	Mt/Pt Ca/Pt	Cont (2d)	ns
		No BPD	29	24.0 (4.9)								

Table 1. Description of Studies (Continued)

Author	Date	Group	N	Age Mean(SD)	Age Range	Gender	Recruitment	Diagnostic Assessment	Exclusion Criteria	PBI scales	PBI Scoring Method	Other Measures
Paris <i>et al.</i>	(1996)	BPD	61	30 (7.9)	18 to 48	M	University Hospital Psychiatry - Outpatient; public advertisement for males with Hx of impulsivity	DIB-R	Sz; Bipolar; organic brain disorder	Mt/Pt Ca/Pt	Cont (2d)	DSQ; BDHI; Developmental Interview: CSA
		No BPD PD: Cluster A, B, C and NOS	60	32.3 (6.5)				DIB-R; DIPD-R; DSM-III-R criteria for PD- NOS				
Paris, Zweig- Frank and Guzder	(1994)	BPD	78	28.3 (6.3)	18 to 48	F	University Hospital Psychiatry - Outpatient	DIB-R	Sz; Bipolar; previous BPD; equivocal scores for BPD and other PD; organic brain disorder	Mt/Pt Ca/Pt	Cont (2d)	Developmental Interview: CSA
		Non-BPD PD: Cluster A, B, C and NOS	72	29.7 (7.2)				DIB-R; DIPD-R; DSM-III-R criteria for PD-NOS				
Patrick <i>et al.</i>	(1994)	BPD	12	35.2 (8.4)	ns	F	Psychotherapy waiting list	DSM-III-R checklists: psychiatry casenote review	Comorbid Axis I Dx; death of both parents or prolonged separation before age 16 yrs	Mt/Pt Ca/Pt	Cont (2d)	AAI; BDI
		Dysthymia	12	32.3 (6.6)				DSM-III-R checklists: psychiatry casenote review				

Table 1. Description of Studies (Continued)

Author	Date	Group	N	Age Mean(SD)	Age Range	Gender	Recruitment	Diagnostic Assessment	Exclusion Criteria	PBI scales	PBI Scoring Method	Other Measures
Torgersen and Alnaes	(1992)	BPD	36	ns	18 to 59	M/F	University psychiatry - outpatient	SCID-II	None stated	Mt/Pt Ca/Pt	Cont (2d); Cat	ns
		Schizotypal PD	19 (5 BPD)	ns								
		Other PD	165	ns								
		No PD	52	ns								
Zweig-Frank and Paris	(1991)	BPD	62	29.6 (9.6)	ns	M/F	Hospital psychiatry - outpatient; University mental health clinic	DIB-R (retrospective version)	Score of 5 or 6 on DIB-R	Mt/Pt Ca/Pt	Cont (2d)	ns
		No BPD	99	29.3 (8.6)								

Key

AN	Anorexia Nervosa
BPD	Borderline Personality Disorder
PD	Personality Disorder
PD NOS	Personality Disorder Not Otherwise Specified
Sz	Schizophrenia
CSA	Childhood Sexual Abuse

Table 1. Description of Studies (Continued)

M	Male
F	Female
ns	Not stated/None stated
Mt	Maternal - PBI completed for mother
Pt	Paternal - PBI completed for father
Ca	Care scale
Pr	Protection scale
Cont	Continuous scoring method
Cat	Categorical scoring method
2D	Two dimensional
3D	Three dimensional
BSI	BPD Syndrome Index
DIB	Diagnostic Interview for BPD
DIB-R	Revised Diagnostic Interview for BPD
DIPD-R	Revised Diagnostic Interview for Personality Disorders
DSM-III/DSM-III-R/DSM-IV/DSM-IV-R	Diagnostic and Statistical Manual for Mental Disorders
EAT	Eating Attitudes Test
IPDE	International Personality Disorder Examination
PDQ-R	Personality Disorder Questionnaire-Revised

Table 1. Description of Studies (Continued)

SCID (ED)	Structured Clinical Interview for DSM-III-R Eating Disorders Module
SCID-I	Structured Clinical Interview for DSM-III-R Axis I Disorders
SCID-II	Structured Clinical Interview for DSM-III-R Axis II Disorders
SCID-P	Structured Clinical Interview for DSM-III-R Patient edition
SCID-PQ	Structured Clinical Interview for DSM-III-R Personality Questionnaire;
SCL-90-R	Symptom Checklist-90-R
AAI	Adult Attachment Interview
ASQ	Attachment Scale Questionnaire
BDHI	Buss-Durkee Guilt-Hostility Inventory
BDI	Beck Depression Inventory
BPI	Basic Personality Inventory
CLEFCQ	Childhood Life Events and Family Characteristics Questionnaire
CTQ	Childhood Trauma Questionnaire
DEQ	Developmental Experiences Questionnaire
DSQ	Defence Style Questionnaire
GAF	Global Assessment of Functioning
SAS-SR	Social Adjustment scale
SFI	Self-report Family Inventory
TCI	Temperament and Character Inventory

Table 2. Methodological Qualities of Studies

Author	Date	Sample size	Sampling method	Indication of response rate	Group Equivalence	Diagnostic Assessment of BPD	Inter-rater reliability of diagnosis	PBI Test-retest reliability	PBI Internal consistency	PBI Construct Validity	Reporting of summary statistics	Effect size
Byrne <i>et al.</i>	(1990)	*	**	*	**	**	*	*	*	*	***	*
Fossati, Donini and Bagnato	(2001)	**	**	**	**	***	***	*	***	*	***	*
Goldberg <i>et al.</i>	(1985)	*	*	*	**	*	*	*	*	*	***	*
Guttman and Laporte	(2002)	*	*	*	**	***	*	*	*	*	***	*
Helgeland and Torgersen	(1997)	*	**	*	*	***	*	*	*	*	***	*
Laporte and Guttman	(2007)	**	**	*	**	***	*	*	***	*	***	*
Machizawa-Summers	(2007)	**	*	**	*	**	*	*	***	*	***	***

Table 2. Methodological Qualities of Studies (Continued)

Author	Date	Sample size	Sampling method	Indication of response rate	Group Equivalence	Diagnostic Assessment of BPD	Inter-rater reliability of diagnosis	PBI Test-retest reliability	PBI Internal consistency	PBI Construct Validity	Reporting of summary statistics	Effect size
Misencik	(2001)	**	*	**	*	**	**	*	***	*	***	*
Paris and Frank	(1989)	**	*	*	*	**	*	*	*	*	***	*
Paris <i>et al.</i>	(1996)	**	**	*	*	***	***	*	*	*	*	*
Paris, Zweig-Frank and Guzder	(1994)	***	**	**	*	***	***	*	*	*	*	*
Patrick <i>et al.</i>	(1994)	*	*	*	**	*	*	*	*	*	**	*
Torgersen and Alnaes	(1992)	**	**	**	**	***	***	*	*	*	***	*
Zweig-Frank and Paris	(1991)	***	*	*	**	**	*	*	*	*	***	*

Table 3. Guidelines for evaluation of methodology

	*	**	***
Sample size¹	Not adequate (Less than 26 per group)	Adequate power to detect medium effect size > 0.8 (26 to 63 per group)	Adequate power to detect large effect size > 0.5 (More than 64 per group)
Sampling method	Opportunistic/Not stated	Consecutive	Random
Reporting of response rate	Not stated	Indication of response rate	Explicit response rate given for each group
Group equivalence	Not stated/No attempt to control statistically	Statistically controlled for/Samples matched on one variable	Matched samples
Diagnostic assessment of BPD	Not stated/Met criteria (clinical judgement)	Casenote review using validated measure/Validated screen	Structured/Semi-structured clinical interview
Inter-rater reliability of diagnosis	Not stated/not measured	Substantial agreement (e.g. Kappa 0.6 -0.8)	Almost perfect agreement (e.g. Kappa 0.8 - 1.0)
PBI Test- retest reliability	Not stated/not measured	Adequate	Good to Excellent
PBI Internal consistency	Not stated/not measured	Adequate (e.g. Cronbach's Alpha 0.6-0.8)	Good to Excellent (e.g. Cronbach's Alpha 0.8 - 0.95)
PBI Construct validity	Not stated/not measured	Adequate	Good to Excellent
Reporting of summary statistics	Not stated	PBI mean scores reported SDs not stated/Mean and standard deviations for PBI scores reported for some groups	Means and standard deviations of PBI scores for all groups
Effect Size	Not stated	Medium (e.g. Eta 0.06 - 0.13)	Large (e.g. Eta > 0.14)

¹ Sample size estimates for analysis using t-tests (two-tailed).

Table 4. Means (standard deviations) for maternal and paternal care and protection PBI scales

Study	Group	N	Parent Bonding Instrument Scores							
			Maternal				Paternal			
			Care		Protection		Care		Protection	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
Byrne <i>et al.</i> (1990)	BPD	15	16.3	11.5	18.8	8.5	14.7	9.9	19.1	10.2
	SZ	14	22.8	8.5	16.1	8	17.8	9.6	11.1	6.1
Fossati, Donini and Bagnato (2001)	BPD	44	18.1	10.5	24.5	7.4	13.6	8.9	19.8	9.2
	PD: Cluster A or C	39	22.5	10	21.5	7.9	18.6	9.5	16.2	8.5
	PD: Cluster B or BPD	98	21.3	8.9	20.9	8.9	17.5	9.5	18.7	8.3
	No PD	70	24.7	8.8	20.7	9.3	20	10	16.3	7.5
	Non-clinical	206	27	8.6	17	8.1	21.9	8.6	15.2	7.5
Goldberg <i>et al.</i> (1985)	BPD	24	17.0	11.3	20.6	10.0	14.0	9.4	17.8	8.6
	Psychiatric controls	22	22.5	9.8	15.3	8.9	20.6	6.8	14.4	6.6
	Non-clinical	10	25.8	8.2	12.5	7.5	19.9	8.8	7.8	5.7
Guttman and Laporte (2002)	BPD	21	18.9	11.8	23.2	10.4	12.7	8.3	19.7	8.8
	Anorexia Nervosa	23	28.3	9.6	15.8	7.6	25.4	8.4	12.0	5.7
	Non-clinical	25	31.1	5.8	10.9	7.5	26.1	6.8	11.2	8.3
Helgeland and Torgersen (1997)	BPD	14	15.3	6.8	19	4.6	na	na	na	na
	SZ	19	17.1	5.7	21.2	8.9	na	na	na	na
	Non-clinical	15	25.6	6	11.1	6.2	na	na	na	na
Laporte and Guttman (2007)	BPD	35	18.6	9.8	na	na	13.5	8.0	na	na
	Anorexia Nervosa	34	27.3	8.4	na	na	21.5	10.6	na	na
	Non-clinical	33	29.7	6.6	na	na	23.2	8.1	na	na
Machizawa-Summers (1997)	BPD	45	18.1	9.8	21.2	9.4	12.5	9.2	20.3	8.1
	No PD	45	25.4	7.0	12.0	6.8	22.1	8.4	10.2	6.8
Misencik (2001)	BPD	36	19.3	9.8	20	9.2	na	na	na	na
	PD-NOS	38	18.2	9.8	18.6	8.6	na	na	na	na
Paris and Frank (1989)	BPD	18	19.1	9.9	16.0	10.1	18.1	8.3	13.6	7.2
	Non-BPD	29	25.2	9.7	14.4	7.8	22.5	9.2	14.7	8.2

Table 4. Means and standard deviations for maternal and paternal care and protection PBI scales (Continued)

Study	Group	N	Parent Bonding Instrument Scores							
			Maternal				Paternal			
			Care		Protection		Care		Protection	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
Paris <i>et al.</i>	(1996) BPD	61	nr	nr	nr	nr	nr	nr	nr	nr
	Non-BPD PDs: Cluster A, B, C and NOS	60	nr	nr	nr	nr	nr	nr	nr	nr
Paris, Zweig-Frank and Guzder	(1994) BPD	78	nr	nr	nr	nr	nr	nr	nr	nr
	Non-BPD PDs: Cluster A, B, C and NOS	72	nr	nr	nr	nr	nr	nr	nr	nr
Patrick <i>et al.</i>	(1994) BPD	12	13.7	nr	22	nr	15.5	nr	17.9	nr
	Dysthymia	12	24.8	nr	14.8	nr	18.5	nr	12.6	nr
Torgersen and Alnaes	(1992) BPD	36	17.1	7.6	19.1	10.5	16	6.5	17.3	8.4
	Schizotypal PD	19	19.1	7	12.4	6.2	16.3	7.6	12.5	8.2
	Other PD	165	21.6	7.2	15.8	8.4	19.6	7.4	14.4	8.1
	No PD	52	24.8	6.5	12.5	7.2	21.9	7.7	12.2	8.2
Zweig-Frank and Paris	(1991) BPD	62	18.3 to 22.8	6.3 to 10.3	15.4 to 19.6	9.5 to 16.9	15.3 to 20.2	5.3 to 8.6	10.0 to 18.8	7.2 to 9.8
	Non-BPD	99	23.5 to 28.0	7.3 to 9.7	12.9 to 17.4	6.6 to 8.1	17.4 to 24.2	7.8 to 11.9	10.5 to 15.0	6.2 to 8.8

Zweig-Frank and Paris (1991) report PBI means by diagnostic, recruitment, and gender group, giving four mean scores for each PBI scale per group. The range of mean scores is therefore reported.

nr = not reported

na = not applicable

Table 5. Effect sizes and observed power

Study	Comparison Group	Maternal				Paternal			
		Care		Overprotection		Care		Overprotection	
		ES	OP	ES	OP	ES	OP	ES	OP
Byrne <i>et al.</i> (1990)	Schizophrenia	0.64*	0.38	0.33	0.13	0.32	0.13	0.95*	0.69
Fossati, Donini and Bagnato (2001)	PD: Cluster A or C	0.43	0.48	0.39	0.42	0.54	0.68	0.41	0.45
	PD: Cluster B or BPD	0.33	0.50	0.44	0.74	0.42	0.70	0.13	0.12
	No PD	0.68	0.95	0.45	0.66	0.68	0.95	0.42	0.60
	Non-clinical	0.93*	1.00	0.97*	1.00	0.95*	1.00	0.55*	0.99
Goldberg <i>et al.</i> (1985)	Psychiatric controls	0.52*	0.41	0.56*	0.46	0.8*	0.75	0.44*	0.31
	Non-clinical	0.89*	0.71	0.92*	0.73	0.65*	0.45	1.37*	0.97
Guttman and Laporte (2002)	Anorexia Nervosa	0.87**	0.80	0.76**	0.69	1.52**	1.00	1.04*	0.92
	Non-clinical	1.31**	0.99	1.36**	0.99	1.77**	1.00	0.99*	0.91
Helgeland and Torgersen (1997)	Schizophrenia	0.29 ^{nr}	0.12	0.31 ^{nr}	0.14	na		na	
	Non-clinical	1.61 ^{nr}	0.99	1.45 ^{nr}	0.96	na		na	
Laporte and Guttman (2007)	Anorexia Nervosa	0.95**	0.97	na		0.85**	0.94	na	
	Non-clinical	1.33**	1.00	na		1.20**	1.00	na	
Machizawa-Summers (1997)	No PD	0.86**	0.98	1.12**	1.00	1.09**	1.00	1.35**	1.00
Misencik (2001)	PD-NOS	0.11	0.70	0.16	0.10	na		na	
Paris and Frank (1989)	Non-BPD	0.62*	0.55	0.17	0.08	0.50	0.39	0.14	0.07
Paris <i>et al.</i> (1996)	Non-BPD PDs: Cluster A, B, C and NOS	nc ^{nr}		nc ^{nr}		nc ^{nr}		nc ^{nr}	
Paris, Zweig-Frank and Guzder (1994)	Non-BPD PDs: Cluster A, B, C and NOS	nc*		nc		nc		nc	
Patrick <i>et al.</i> (1994)	Dysthymia	nc**		nc*		nc		nc	

Table 5. Effect sizes and observed power (Continued)

Study	Comparison Group	Maternal				Paternal			
		Care		Overprotection		Care		Overprotection	
		ES	OP	ES	OP	ES	OP	ES	OP
Torgersen and Alnaes (1992)	Schizotypal PD	0.27	0.16	0.78*	0.81	0.04	0.04	0.58	0.56
	Other PD	0.61**	0.99	0.35	0.69	0.52**	0.96	0.35	0.69
	No PD	1.09**	1.00	0.73**	0.92	0.83**	0.97	0.61**	0.81
Zweig-Frank and Paris (1991)	Non-BPD	nc**		nc**		nc**		nc**	

nc = not calculable

nr = not reported

na = not applicable

* Study reported significant difference ($p < 0.05$)

** Study reported significant difference ($p < 0.01$)

Observed power > 0.8 is emboldened

Figure 1. The four broad parenting styles defined by the two PBI dimensions. Adapted from Parker *et al.* (1982). Copyright The Royal College of Psychiatrists, 1982. Printed by permission.

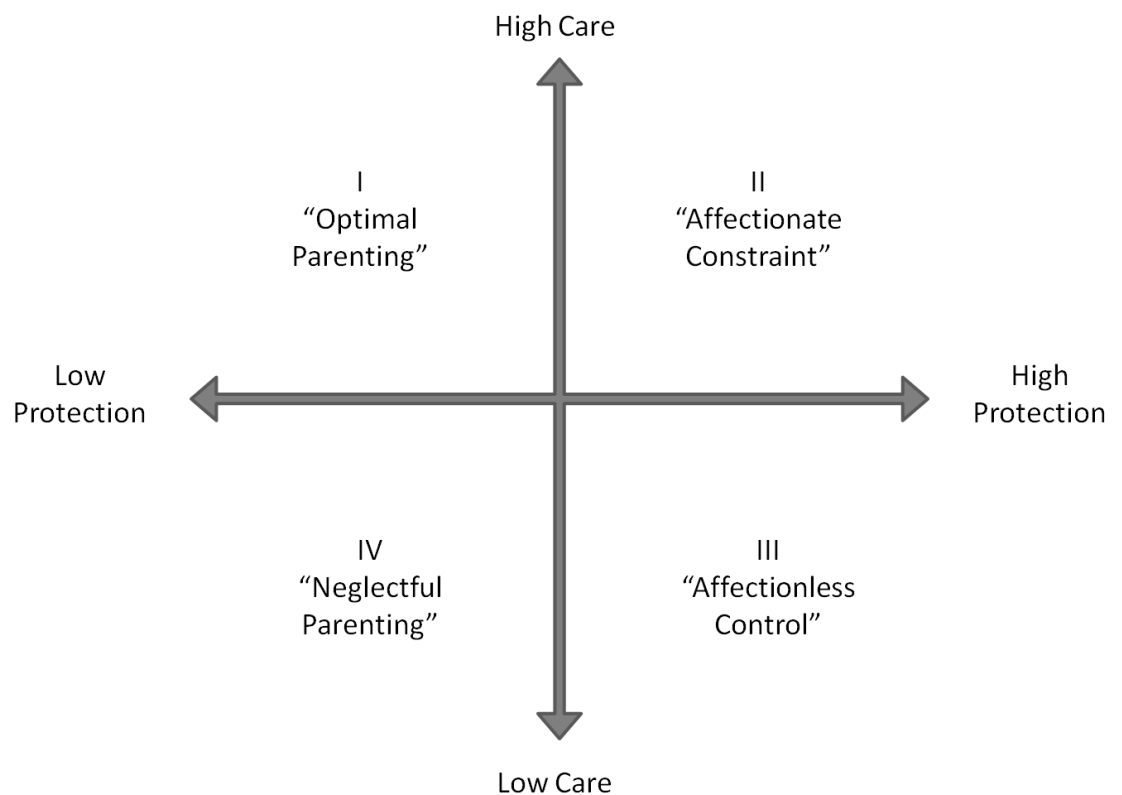
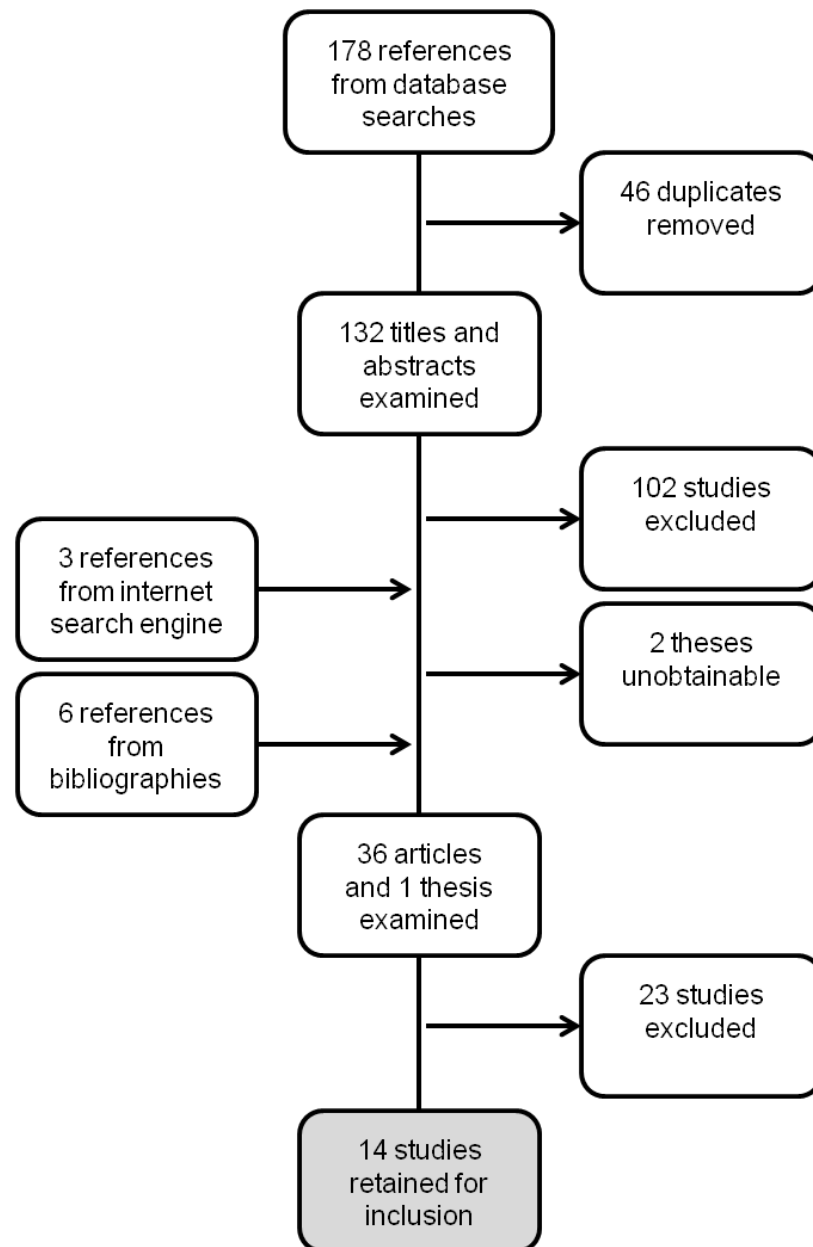


Figure 2. Search strategy



Appendix - Parental Bonding Instrument

This questionnaire lists various attitudes and behaviours of parents. As you remember your MOTHER/FATHER in your first 16 years would you place a tick in the most appropriate box next to each question.

	Very Like	Moderately Like	Moderately Unlike	Very Unlike
1. Spoke to me in a warm and friendly voice				
2. Did not help me as much as I needed				
3. Let me do those things I liked doing				
4. Seemed emotionally cold to me				
5. Appeared to understand my problems and worries				
6. Was affectionate to me				
7. Liked me to make my own decisions				
8. Did not want me to grow up				
9. Tried to control everything I did				
10. Invaded my privacy				
11. Enjoyed talking things over with me				
12. Frequently smiled at me				
13. Tended to baby me				
14. Did not seem to understand what I needed or wanted				
15. Let me decide things for myself				
16. Made me feel I wasn't wanted				
17. Could make me feel better when I was upset				
18. Did not talk with me very much				
19. Tried to make me feel dependent on her/him				
20. Felt I could not look after myself unless she/he was around				
21. Gave me as much freedom as I wanted				
22. Let me go out as often as I wanted				
23. Was overprotective of me				
24. Did not praise me				

Care scale: 1, 5, 6, 11, 12, 17 (Very like = 3, Moderately like = 2, Moderately unlike = 1, Very unlike = 0); 2, 4, 14, 16, 18, 24 (Very unlike = 3, Moderately unlike = 2, Moderately like = 1, Very like = 0).

Protection scale: 8, 9, 10, 13, 19, 20, 23 (Very like = 3, Moderately like = 2, Moderately unlike = 1, Very unlike = 0); 3, 7, 15, 21, 22, 25 (Very unlike = 3, Moderately unlike = 2, Moderately like = 1, Very like = 0).

2. Context and Aims

2.1 Background

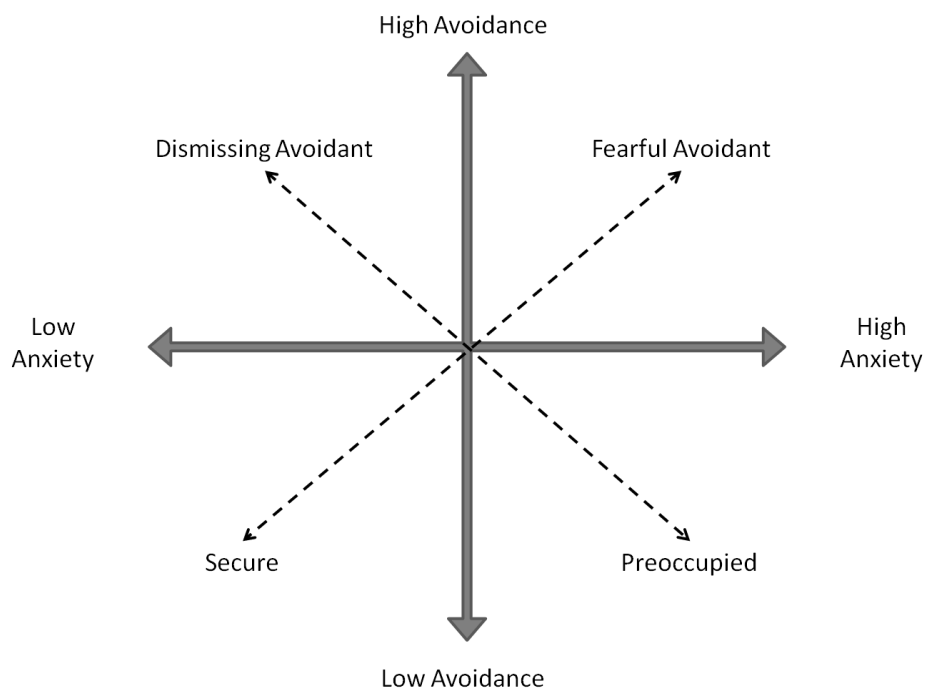
Attachment theory (Bowlby, 1969; 1973, 1980) describes the biologically based system within the child that drives the formation of affectional bonds to their caregiver and the associated behaviours designed to ensure the physical proximity and mental availability of the caregiver. “Attachment style” refers to observed patterns of behaviour in the attachment relationship (Cassidy, 2008). A child’s attachment to a particular person may be classified as secure, avoidant, ambivalent or disorganised (Ainsworth *et al.*, 1978; Lyons-Ruth & Jacobvitz, 2008). Although attachment style is specific to a particular relationship, attachment style in childhood is predictive of attachment states of mind in close relationships in adulthood (Berlin, Cassidy, & Appleyard, 2008). George, Kaplan and Main (1984, 1985, 1996) devised a qualitative method of assessing adult attachment states of mind, the Adult Attachment Interview (AAI). They observed four categories of attachment states of mind, which correspond to the infant attachment styles: autonomous, dismissing, pre-occupied and unresolved (Hesse, 2008). Hazan and Shaver (1987) introduced the concept of adult attachment style and applied it to romantic and marital relationships. Numerous self-report scales have subsequently been developed in order to assess adult attachment, for a review see Ravitz (2010). There is ongoing debate regarding the categorical and continuous approaches to measurement of attachment (Griffin & Bartholomew, 1994a). Bartholomew (1990) provided a useful conceptualisation which highlights the similarities between self-reported adult attachment style and the dimensions defining infant attachment categories (Mikulincer & Shaver, 2008), see figure 2.1 below. Thus, insecure attachment may be characterised by high attachment-anxiety; high attachment avoidance; or a combination of both (Bartholomew, 1990).

In attachment relationships the caregiver facilitates the child’s understanding of their own and other’s mental states (Fonagy, Gergely, Jurist, & Target, 2004). Bowlby (1980) developed the concept of “internal working models” to describe how experiences of interactions with an attachment figure become internalised. The internal working model is defined as an internalised mental representation of the self, the other and the relationship between them (Bowlby, 1980) which develops from the abstraction of consistent and repeated aspects of self-other interactions (Fonagy *et al.*, 2004). Fonagy and colleagues have coined the term “mentalization” to describe the capacity for representing one’s own and other’s mental states (Fonagy *et al.*, 2004); and which encompasses all aspects of mental experience, including cognition and affect (Allen & Fonagy, 2006). Mentalization is a broad psychological construct that has conceptual overlaps with numerous mental processes such as mindfulness, empathy and insight (Allen & Fonagy, 2006). Within cognitive psychology,

metacognition refers to the process of thinking about one's own thoughts, or "cognition about cognition" (Flavell, 1979). As such, metacognition is an aspect of mentalization that is concerned with the cognitive features of one's own mental states. Wells and colleagues (2000) have devised several measures for the assessment of metacognition. The questionnaires focus on a person's knowledge of their own cognitive processes, and the strategies that they are aware of using in order to regulate their cognitions, particularly anxious thoughts.

A primary function of the attachment relationship is to provide containment that facilitates development of capacity to represent and manage affect (Bion, 1962). In a secure attachment relationship the parent is responsive to the child's experiences of affect and regulates these experiences using affect-mirroring and language (Fonagy *et al.*, 2004). These interactions are internalised by the child, who develops the ability to regulate their affect through various behavioural and cognitive strategies. For example, appropriate proximity seeking, self-soothing and, as language skills develop, using thoughts for self-reassurance. Insecurity of attachment is associated with a lack of containment and therefore results in impaired ability to regulate affect using adaptive strategies (Fonagy *et al.*, 2004). It follows that insecure attachment leads to the development of maladaptive metacognitive strategies for managing distress.

Figure 2.1 Diagram showing the two-dimensional space defined by attachment-anxiety and attachment-avoidance. From Mikulincer and Shaver (2008) p. 504. Copyright (2008) by the Guilford Press. Reprinted by permission.



Borderline personality disorder (BPD) is a psychiatric diagnosis characterised by emotional and behavioural instability, and impaired ability to maintain stable relationships (American Psychiatric Association, 2000). It has been proposed that BPD is a disorder of attachment resulting from difficulties in early attachment relationships (Bateman & Fonagy, 2006). Insecure forms of attachment, specifically preoccupied and unresolved styles, have been associated with BPD using both interview (Barone, 2003; Diamond *et al.*, 2003; Fonagy *et al.*, 1996; Rosenstein & Horowitz, 1996; Stalker & Davies, 1995; Stovall-McClough & Cloitre, 2003) and self-report methods of assessment (Patrick *et al.*, 1994). See Agrawal *et al.* (2004) and Levy *et al.* (2005) for reviews. However, most studies examining self-reported attachment have not used representative samples of individuals diagnosed with BPD and have for the most part relied upon non-clinical/student populations (e.g. Nickell *et al.*, 2002); or broad clinical groups such as male domestic abusers (e.g. Dutton *et al.*, 1994). Furthermore, there have been few studies that have compared participants with BPD to those with other psychiatric disorders on their self-reported attachment style (e.g. Patrick *et al.*, 1994).

There is evidence that people with BPD are impaired in their capacity to form representations of their own mental states, (Fonagy *et al.*, 2004). However, it is not clear whether the specific process of metacognition is impaired in BPD, and whether it is associated with attachment style. There is a theoretical basis for metacognitive deficits in BPD (e.g. Linehan, 1993; Fonagy *et al.*, 2004) and evidence for treatments which aim to improve metacognitive skills such as Dialectal Behaviour Therapy, (DBT) (e.g. Linehan, 2006). In addition, mentalization-based therapy has been developed in order to help people with BPD to develop their capacity to represent mental states, (e.g. Bateman & Fonagy, 2006). Wells (2000) argues that maladaptive metacognitive strategies contribute to the maintenance of anxiety states and BPD is associated with affective dysfunction (American Psychiatric Association, 2000). It is therefore hypothesised that people with BPD will have maladaptive metacognitive beliefs about managing their distress.

Given that insecure attachment is associated with inadequate containment, then an association is expected between attachment style and a reliance on maladaptive metacognitive strategies for coping with distressing thoughts, regardless of psychiatric diagnosis. Similarly, Wells (2000) has argued that poor metacognitive strategies for managing anxious thoughts are predictive of emotional distress. The contribution of both attachment and metacognitions are therefore also of interest.

The proposed research will compare self-reported attachment style in adults with BPD to that of depressed adults in a clinical control group. Similarly, the study will compare the metacognitive beliefs and strategies of the two groups. The study will also determine whether there is an association between attachment and metacognitions, and examine how these relate to current mood state and clinical severity of symptoms.

2.2 Hypotheses

Primary Hypotheses

Hypothesis 1a: The BPD group will demonstrate significantly higher attachment-anxiety on the Relationship Scales Questionnaire than the depression group.

Hypothesis 1b: The BPD group will demonstrate significantly higher attachment-avoidance on the Relationship Scales Questionnaire than the depression group.

Secondary Hypotheses

Hypothesis 2: There will be a significant difference between scores of the BPD group and the depression group on the Metacognitions Questionnaire (non-directional hypothesis).

Hypothesis 3a: There will be a significant correlation between attachment-anxiety and metacognition scores.

Hypothesis 3b: There will be a significant correlation between attachment-avoidance and metacognition scores.

Hypothesis 4: Attachment-avoidance, attachment-anxiety and metacognition scores will be predictive of severity of clinical symptoms.

3. Methodology

3.1 Participants

Participants were recruited for assignment to one of two groups: a borderline personality disorder (BPD) group and a clinical comparison group. The inclusion criterion for the BPD group was an existing diagnosis of borderline personality disorder. Patients had previously been diagnosed by a consultant psychiatrist using DSM-III or ICD-10 criteria. The researcher verified the diagnosis by examining their psychiatric records. Those patients who were currently in crisis were not invited to participate in the study. The inclusion criteria for the clinical comparison group were a referral to the Psychology Department for signs and/or symptoms of depression, or depression as a primary presenting issue. Exclusion criteria for both groups were a diagnosis of learning disability, comorbid diagnoses of alcohol or drug addiction, or current hospital admission.

Participants were recruited from a range of sources. Patients who were eligible for participation in the BPD group were identified from the current caseloads within psychology, psychiatry and the community mental health teams throughout NHS Highland. Further potential participants for this group were identified from the Dialectical Behaviour Therapy (DBT) waiting list held by the Personality Disorders Service. These patients were all assessed for BPD as part of the routine assessment procedure of the service. Potential participants for the clinical control group were identified from the Psychology Department's database: from the waiting list and from the current caseloads of individual clinicians.

Patients were first approached to participate in the study by a healthcare professional or allied healthcare professional currently providing assessment or intervention (i.e. their psychiatrist, psychologist, CBT therapist or community psychiatric nurse). Patients who were being currently seen within mental health services were either approached in person at a routine appointment, or contacted by post in a letter from their caseholder. Those patients who were on the waiting list for a service (psychology or DBT) were invited to participate in a letter from the lead clinician of the service. All of those invited to participate were provided with an 'Information about the Research' sheet (see Appendix B.1), either by the clinician, or enclosed with the invitation letter. They were instructed to contact the researcher (by post, phone or email) if they were interested in participating in the study. If the patient expressed interest directly to the clinician inviting them to participate, the clinician requested their permission to give their contact details to the researcher. In both cases, the researcher provided further information and answered any questions the patient had before including them in the study. Informed, written consent was obtained from all participants (see Appendix B.3).

In total, 40 participants were recruited to the study: 19 were assigned to the BPD group and 21 to the clinical comparison group. The BPD group comprised 2 males and 17 females, ranging in age from 30.1 to 56.0 years, mean age was 42.7 years. The clinical comparison group comprised 10 males and 11 females, ranging in age from 31.5 to 73.9 years, mean age was 48.8 years.

3.2 Procedure

Participants were asked to complete four short questionnaires: the Relationship Scales Questionnaire (RSQ)(Griffin & Bartholomew, 1994b); Metacognitions Questionnaire (30-item version)(MCQ-30)(Wells & Cartwright-Hatton, 2004); the Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM)(Evans *et al.*, 2000); and the Hospital Anxiety and Depression Scale (HADS)(Snaith & Zigmond, 1994). All participants completed the measures in the same order. A description of the measures, the rationale for selection and an overview of psychometric properties is provided under 'measures'. The participants were also asked to complete a brief form that recorded basic demographic information: age, gender, marital status, employment status and level of education. The researcher examined psychiatric case notes in order to obtain diagnostic information, number of acute psychiatric admissions and duration of admissions.

The researcher contacted those patients who had agreed to participate in the study and gave them the option to either meet with the researcher to complete the questionnaires at an appropriate NHS premises (hospital or general practitioner's surgery); or to receive the questionnaires by post to complete and return in a stamped addressed envelope provided. Those who attended in person were given the choice to read and complete the questionnaire by themselves, or to have the researcher read out the statements and record their answers. Those completing the questionnaire by post were instructed to contact the researcher if they had any further questions, or difficulties in completing the questionnaires. The option to complete the questionnaire by post was offered due to the geographical distribution of the population in Highland. Of the 19 participants in the BPD group, 10 opted to complete the questionnaire by post, (47.6 percent). All of the participants in the clinical comparison group opted to complete the questionnaire by post. Following the study, participants were sent a summary of the findings of the research.

3.3 Measures

Relationship Scales Questionnaire

The Relationship Scales Questionnaire (RSQ) was developed by Griffin and Bartholomew (1994b). It is a 30 item self-report questionnaire designed to assess an

individual's style of attachment in adult relationships. (For the RSQ questionnaire used in this study, see Appendix B.5.) The questionnaire comprises a list of statements regarding close relationships and the respondent is instructed to rate the extent to which the statement describes them on a scale of one to five (Bartholomew, 2005; Griffin & Bartholomew, 1994b). Although this study uses the original five-point scale (Griffin & Bartholomew, 1994b), there is a seven-point version, provided by an internet website (Center for HIV Identification Prevention and Treatment Services, 2010). The statements were derived from Hazan and Shaver's (1987) attachment measure, Collin and Read's (1990) Adult Attachment Scale and Bartholomew and Horowitz's (1991) Relationship Questionnaire. There are several methods of calculating scores on the questionnaire. The original scoring system provides a continuous measure of attachment on four subscales corresponding to the four attachment style categories of the Adult Attachment Interview, numbers in brackets refer to the items used to assess each subscale (Griffin & Bartholomew, 1994b): 'secure' (3,9,10,15,28), 'dismissing' (2,6,19,22, 28), 'preoccupied' (6,8,16,25) and 'fearful' (1,5,12,24). Each subscale score is obtained by calculating the mean of the ratings from either four or five items. However, there are numerous alternative models for measuring self-reported attachment using the RSQ. Kurdek (2002) provided the most comprehensive exploration of the competing models of measurement to date. He explored four models that had been proposed to underlie the RSQ: Griffin and Bartholomew's (1994b) four prototypes; Hazan and Shaver's (1987) three dimensions of 'secure', 'avoidant' and 'anxious/ambivalent'; Collins (1990) revision of Collins and Read's (1996) three dimensions of 'closeness', 'dependency' and 'anxiety'; and Brennan *et al.*'s (1998) two dimensions of 'avoidance' and 'anxiety', operationalised in two alternative combinations of items by Simpson *et al.* (1992) and Feeney and Hohaus (2001). Kurdek (2002) concluded that attachment-anxiety and attachment-avoidance were reliable factors in the RSQ. Roisman *et al.* (2007) also found that a factor structure comprising two dimensions, 'attachment avoidance' and 'attachment anxiety', was the best-fitting model. However, a further model since proposed by Backstrom and Holmes (2001) as a viable alternative to this two-factor model comprised three dimensions of security/insecurity, avoidance/dismissing and pre-occupied/anxious. The dimensions are a continuous measurement of Hazan and Shaver's (1987) three attachment types, and correspond to Collin and Read's proposed three dimensions of closeness, dependency and anxiety, as already assessed by Kurdek (2002). Backstrom and Holmes (2007) found that the three factor model had a better fit than a two factor one, using confirmatory factor analysis. Given the disagreement regarding the most appropriate model for scoring the measure, the construct validity of the RSQ was examined using factor analysis in this study. (See Results section below.)

In the four subscale model, internal consistency was acceptable to good for three of the subscales, with Cronbach's alpha scores ranging from 0.69 to 0.82, however, the secure

scale alpha score was 0.50 (Ravitz *et al.*, 2010). One model based on two dimensions demonstrated good internal consistency with alpha scores of 0.86 for attachment-avoidance and 0.84 for attachment-anxiety (Roisman, *et al.*, 2007). The model by Simpson *et al.* (1992) also demonstrated good internal consistency, with an alpha score of 0.77 and 0.83 for anxiety and avoidance respectively.

The RSQ has demonstrated convergent, discriminant and predictive validity (Ravitz *et al.*, 2010). It is correlated with the NEO Personality Inventory factors (Costa & McCrae, 1985) and high levels of anxiety and avoidance on the RSQ have been found to be predictive of psychopathology (Fortuna & Roisman, 2008). Using the three factor model, Backstrom and Holmes (2007) reported significant correlations between the RSQ subscales and other measures of attachment: the Multi-item Measure of Adult Romantic Attachment (Brennan & Shaver, 1995); the Adult Attachment Scale (Collins & Read, 1990); and the Dyadic Adjust Scale (DAS)(Spanier, 1976).

A self-report measure was selected for this study as a short and convenient alternative to interview assessments. The RSQ was selected to assess attachment style in this study as this particular measure allows the use of both dimensional and categorical models, and can be meaningfully interpreted in relation to the original attachment style categories of the Adult Attachment Interview (George, Kaplan, & Main, 1984, 1985, 1996). Furthermore, the RSQ has demonstrated acceptable to good reliability and good validity.

Metacognitions Questionnaire (MCQ-30)

Cartwright-Hatton and Wells (1997) constructed the Metacognitions Questionnaire (MCQ) as a multi-dimensional measure of beliefs about worry and intrusive thoughts. They observed that, in contrast to other brief measures of metacognition, the length of the 65-item MCQ limited its application, and further developed the scale to create a 30-item version (Wells and Cartwright-Hatton, 2004). For the MCQ-30 questionnaire used in this study, see Appendix B.6. The MCQ-30 comprises five subscales: positive beliefs about worry; negative beliefs about thoughts of danger and uncontrollability; the need to control thoughts; cognitive confidence regarding attention and memory; and cognitive self-consciousness (attending to thought processes), (Wells & Cartwright-Hatton, 2004). The authors state that these five factors assess three domains of metacognition: metacognitive monitoring, positive and negative metacognitive beliefs and cognitive confidence (Wells & Cartwright-Hatton, 2004). The measure comprises 30 statements regarding beliefs about worry. Respondents complete the questionnaire by rating the extent to which they agree with the 30 items on a four-point scale. Scores for each of the five subscales are calculated by summing the responses from the six items that comprise that factor.

Wells and Cartwright-Hatton (2004) assessed the reliability of the MCQ-30 during its development by administering it to a convenience sample of 182 students, university staff

and health service employees. They examined internal consistency using Cronbach's alpha. Alpha scores for four of the subscales ranged from 0.91 to 0.93, and the 'need to control thoughts' subscale yielded an alpha score of 0.72, (Wells & Cartwright-Hatton, 2004). The alpha score for the total was 0.93, therefore the measure demonstrated good to excellent internal consistency on the five subscales and overall score, (Wells & Cartwright-Hatton, 2004). The stability of the MCQ-30 was assessed by re-testing the sample at a mean interval of 34 days, (range from 22 to 118 days). Repeated measures t-tests demonstrated no significant differences on the subscales or total score between the two administrations, (Wells & Cartwright-Hatton, 2004). Pearson re-test correlations were significant, ranging from 0.59 to 0.87 for the subscales and 0.75 for the total scale, (Wells & Cartwright-Hatton, 2004).

The convergent validity of the MCQ-30 was demonstrated by significant positive correlations between the subscales and measures of related constructs (Wells & Cartwright-Hatton, 2004). The construct validity of the scale was examined using exploratory factor analysis; the authors concluded that the five factor structure was a good fit for the measure, and that factor composition replicated that of the full version of the MCQ, (Wells & Cartwright-Hatton, 2004).

The MCQ-30 was selected for this study as it has demonstrated good validity and good to excellent reliability, (Wells & Cartwright-Hatton, 2004). The theoretical constructs of the measure were deemed useful as they provide descriptions of aspects of metacognition corresponding to deficits that existing in BPD, for example intolerance to distressing thoughts (National Collaborating Centre for Mental Health, 2009). In addition, it is a brief measure of metacognition, and therefore suited to the practicalities of the study.

Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM)

The CORE Outcome measure, (CORE-OM)(Evans *et al.*, 2000) is a self-report questionnaire designed to provide a global measure of current psychological distress, (Gray & Mellor-Clark, 2007). CORE is an evaluation system for psychological services that was developed collaboratively by researchers and practitioners in order to inform client care, (Barkham *et al.*, 1998). The measure consists of 34 statements which the patient is asked to endorse on a 5-point scale, according to how they have felt in the previous week. Mean responses are calculated to obtain a total score and four subscale scores: subjective well-being (4 items); common problems or symptoms (12 items); life functioning (12 items); and risk of harm to self or others (6 items).

The CORE-OM has been validated using general population samples (Connell *et al.*, 2007) and samples from primary (Evans *et al.*, 2003; Mellor-Clark *et al.*, 2001) and secondary care (Barkham *et al.*, 2005). Evans *et al.*, (2002), reported high correlations between the CORE-OM and seven conceptually related measures demonstrating construct

specific convergent validity. The stability of the CORE-OM has been demonstrated as excellent (e.g. Evans *et al.*, 2002): test-retest correlations ranging from 0.87 to 0.91 were obtained for the total and subscale scores. The stability of the risk subscale was low at 0.64, however, the authors observed that this was likely to be due to the inherent nature of the issues described by these items. Evans *et al.* (2002) also found that the measure demonstrated good to excellent internal consistency, with Cronbach's alpha scores ranging from 0.75 to 0.94 for the subscales and 0.94 for all items.

The CORE was included in the study to provide a measure of the severity of clinical symptoms experienced by the participant. It is a standardised, well validated measure, and is widely used in clinical practice. Furthermore it has been validated for use with people with BPD, (Whewell & Bonanno, 2000). The CORE is the routine evaluation measure used by the Psychology Service and the Personality Disorders Service, therefore any association between this measure and attachment or metacognition would be of clinical relevance locally.

Hospital Depression and Anxiety Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS) (Snaith & Zigmond, 1994) is a 14-item self-report measure, with half the items contributing to an anxiety subscale and half to a depression subscale. Items are statements relating to symptoms of depression and anxiety, and the respondent is asked to rate each statement on a four point scale, indicating to what extent they agree with the statement. The seven depression ratings and the seven anxiety ratings are added together to give a maximum score of 21 on each subscale. This score may be compared with descriptive categories to indicate whether the depression or anxiety is normal (0 to 7), mild (8 to 10), moderate (11 to 14) or severe (15 to 21).

The validity of the two dimensions of the HADS has been demonstrated, (Zigmond & Snaith, 1983). Hermann (1997) conducted an extensive review of over 200 published studies using the HADS, summarising the data on reliability and validity. He reported that the two-dimensional structure was supported by factor analyses; the two factors are highly correlated with the subscales ($r > 0.90$) and account for approximately 50 percent of the variance. The internal consistency of the subscales is good, with Cronbach's alpha's ranging from 0.80 to 0.93, (Hermann, 1997). At intervals of up to 2 weeks test-retest correlations are high $r > 0.80$, indicating good stability, (Hermann, 1997).

The HADS was used in the study to compare the rate of these common Axis I disorders in the two groups, and to control for the potential effects of anxiety and depression in comparing the metacognitive abilities of people with and without BPD. The HADS is standard, well validated measure, widely used in clinical practice.

3.4 A Priori Power Analysis

The primary hypothesis was that there will be a significant difference in attachment style between the borderline personality disorder group and the clinical comparison group, as measured by the RSQ. Due to a lack of studies reporting means and sample sizes for different groups on this measure, group comparison data was obtained from a study that used a related measure, (Reis & Grenyer, 2004). The Relationships Questionnaire (RQ)(Bartholemew & Horowitz, 1991) has demonstrated concordance with the RSQ. The means and standard deviations of a depressed and nonclinical group from Reis and Grenyer's (2004) study gave an effect size (Cohen's d) of 0.72. An a priori sample size calculation for the Students T-test (two-tailed) was performed. It was estimated that, based on $\alpha = 0.05$ and $d = 0.72$, a total sample size of 64 (32 in each group) would be required in order to achieve a statistical power level of 0.8.

3.5 Statistical Analyses

The participants' responses to the questionnaires were entered into a database by the researcher and analysed using the Statistical Package for the Social Sciences (SPSS) 11.0 computer software. The proportion of missing data was 0.4 percent, and this was replaced using series means. Demographic information and participants' information from psychiatry case notes was also entered into SPSS. Independent samples t-tests (two-tailed) and Chi-squared tests were used to examine group equivalence.

A factor analysis was performed on the data for the RSQ to confirm its construct validity in order to select an appropriate scoring method. Wells and Cartwright-Hatton's (2004) five-factor structure for the MCQ-30 was used. Internal consistency of RSQ subscales, MCQ-30 subscales and overall scale was assessed by calculating Cronbach's (1951) alpha scores.

A series of analyses of variance were conducted to compare the two groups on their attachment scores and metacognition scores. The contribution of gender, anxiety and depression to group differences was also explored by entering these features as independent variables in the analyses. As the MCQ-30 data was not normally distributed, the differences between groups on this measure were explored using Mann-Whitney tests.

The association between attachment and metacognition scores was examined using Spearman's correlational analyses. Separate multiple regression analyses were conducted to predict current mood state (as measured using the HADS) and broader clinical symptoms (as measured using the CORE) from attachment and metacognition scores.

3.6 Ethical Considerations

The study was granted ethical approval by the South of Scotland Research Ethics Committee. The study was reviewed and given favourable opinion by the Department of Clinical Psychology Ethics Committee and the School of Health in Social Science Ethics committee at the University of Edinburgh. Management approval was given by NHS Highland Research and Development Department. All participants were required to sign a consent form to indicate that they had given their informed consent. The ethical considerations that this study warranted are discussed below.

Participants were recruited from a range of NHS providers, therefore there was a potential for confusion between the research and patient care. All of the patients invited to participate in the study were informed that their participation, or their decision not to participate, would in no way influence the treatment provided to them by the services involved in the study. They were also informed that they could withdraw from the study without giving a reason, and that this would not affect the care they received. In the event that a treatment issue was identified (i.e. risk of harm to self or others), the researcher contacted the patient's current care provider to report relevant information. The researcher did not contribute to patient care.

The study drew participants from groups of people with symptoms or diagnoses of conditions that are known to include psychological distress. The CORE-OM includes several items relating to risk of harm to self and others, in which a participant's response could, for example, indicate that they have made plans to end their own life. Therefore it was known that participants could potentially disclose risk of harm to self or others during the study either in their questionnaire responses, or in conversation with the researcher. For this reason, only participants who were receiving current support from a mental health service (e.g. psychiatry, or a community mental health team) were considered for inclusion. Participants were advised that a disclosure of risk of harm to self or another would be communicated to their case holder (or other appropriate professionals). This was made explicit in the consent form. In the case of such a disclosure, a risk assessment was carried out by the researcher, in accordance with NHS Highland policies and procedures, to decide the appropriate course of action. Given that study participation could have implications for care by other professionals the general practitioners of all participants were informed by letter that their patient had taken part in the study. This was done with the participant's prior written consent.

All data generated by the study remained confidential and, with the exception of disclosure of risk to self or others, was not shared with the involved healthcare professionals. Responses to the questionnaires were assigned an anonymous identification code and stored separately from participants' personal information. All data entered on to the SPSS

database was anonymous. In the course of the study, participants' psychiatric notes were obtained to gather relevant information. This data was treated confidentially, and was anonymised in the same way as the questionnaire data.

The potential disadvantages of taking part in the study were considered to be the time involved in participation and travel; travel expenses incurred to the participant; and the cost of taking time from employment if applicable. The researcher attempted to reduce the likelihood, or impact of these occurrences in a number of ways. Research was held at a site as convenient as possible for the participant, for example, at their local health centre. A variety of dates and times were offered and participants were given the option to complete the questionnaire at home (with support from the researcher available by telephone) and return the questionnaire pack by post.

4. Results

4.1 Demographic Information

Table 4.1 presents a summary of demographic information provided by participants and gathered from the review of participants' psychiatric case notes. All differences were analysed using either independent samples t-tests (two-tailed) or Chi-squared tests. There was a significant difference in the proportion of male and female participants in each sample, ($\chi^2_1 = 6.54, p < 0.011$). The difference between the two samples in the age of participants was not significant, ($t_{38} = 1.85, p < 0.071$)(two-tailed).

Table 4.1. Demographic Information

		Group	
		BPD	Depression
Number of participants		19	21
Number of males (percent)		2 (10.5) *	10 (47.6)
Number of females (percent)		17 (89.5) *	11 (52.4)
Mean Age (SD)		42.7 (9.1)	48.8 (11.2)
Age range		30.1 to 56.0	31.5 to 73.9
Marital Status	<i>Single</i>	3	5
	<i>Cohabiting</i>	4	2
	<i>Married</i>	5	11
	<i>Divorced/Separated</i>	7 *	2
	<i>Widowed</i>	0	1
Employment Status	<i>Unemployed: never employed</i>	0	0
	<i>Unemployed: more than a year</i>	16 **	3
	<i>Unemployed: less than a year</i>	0	3
	<i>Employed: part-time</i>	1	3
	<i>Employed: full-time</i>	2	5
	<i>Employed: self-employed</i>	0	3
	<i>Retired</i>	0 *	4
	<i>Full-time education</i>	0	0
Highest level of educational qualification	<i>No qualifications</i>	7 *	1
	<i>Standards/GCSE/O-level</i>	4	4
	<i>Highers/AS-level/A-level</i>	1	4
	<i>Vocational qualifications</i>	5	6
	<i>Undergraduate degree</i>	2	4
	<i>Masters degree</i>	0	2
	<i>Doctorate</i>	0	0

* $p < 0.05$; ** $p < 0.01$

Table 4.2 presents information about participants' current co-morbid diagnoses, and in-patient admissions to acute psychiatric services. All differences were analysed using either independent samples t-tests or Chi-squared tests.

Table 4.2 Psychiatric History

	Group	
	BPD	Depression
Current psychiatric diagnoses		
<i>DSM Axis I</i>		
-Depression	1	5
-Anxiety	0	1
-Panic disorder	1	1
-Social anxiety	0	1
-Obsessive compulsive disorder	1	1
-Schizoaffective disorder	1	0
-Atypical anorexia nervosa	1	0
<i>DSM Axis II</i>		
- Antisocial personality disorder	1	0
-Obsessive compulsive personality disorder	1	0
Mean number of acute psychiatric admissions	3.9 **	0.05
Mean duration of admissions in days	121.8 **	3.8

* $p < 0.05$; ** $p < 0.01$

4.2 Self-reported attachment

Psychometric properties of the Relationship Scales Questionnaire

As outlined in the methods section above, there are several models for scoring the RSQ, based on two, three and four factor structures. In order to confirm that the scoring method was appropriate and demonstrated construct validity, a factor analysis was conducted on the data from this study. The method used was principal axis factoring with varimax rotation. Factor analysis of the RSQ responses of all participants yielded nine factors with an Eigenvalue greater than one. However, examination of the scree plot suggested either a two or four factor structure. Taken together, the first two factors accounted for 41.3 percent of the overall variance. The third and fourth factors did not contribute substantially to the variance, accounting for 7.9 and 7.4 percent respectively. Two

factors were extracted and examination of the items loading on to these two factors supported the existence of an attachment-anxiety and an attachment-avoidance dimension. There was a low, significant correlation between the two subscales ($r = 0.338$, $p < 0.033$), indicating that they are not fully independent.

The internal consistency of the RSQ was examined by calculating Cronbach's Alpha for each of the subscales for each of the participant groups. The attachment-anxiety scale had an alpha of 0.81 in the BPD group and 0.89 in the depression group. The attachment-avoidance scale had an alpha of 0.78 in the BPD group and 0.83 in the depression group.

Participants' subscale scores were obtained by calculating the total rating response from the items comprising each subscale. Items with negative factor loadings were reversed, prior to the calculation of subscale scores. Attachment-anxiety comprised items 4, 7, 8, 9, 11, 12, 14, 16, 17, 18, 21, 22, 23, 25 and 28; and attachment-avoidance comprised items 1, 2, 3(reversed), 5, 6, 10(reversed), 13, 15(reversed), 19, 20, 24, 26, 27(reversed), 29 and 30(reversed). Items are presented by subscales in Appendix C.2.

This two-factor structure is consistent with models proposed by Simpson and colleagues (1992) and Feeney and Hohaus (2001). Two-factor structures have demonstrated better validity than other models, including the original four-prototype scoring method proposed by Griffin and Bartholomew (1994b; Kurdek, 2002).

Self-reported attachment in BPD and depression

Hypothesis 1a: "The BPD group will demonstrate significantly higher attachment-anxiety on the Relationship Scales Questionnaire than the depression group."

Hypothesis 1b: "The BPD group will demonstrate significantly higher attachment-avoidance on the Relationship Scales Questionnaire than the depression group."

The distributions of attachment-anxiety and attachment-avoidance subscale scores were examined using box-plots and histograms (see Appendix C.1). The scores were normally distributed, without significant skew or kurtosis. The standard deviations for the RSQ subscales were similar for both groups, therefore homogeneity of variance is assumed. Two outliers in the BPD group were identified and removed from the analysis. The mean RSQ subscale scores and standard deviations were calculated for the two groups and are presented in Table 4.3.

Table 4.3 Relationship Scales Questionnaire mean subscale scores and standard deviations in BPD and depression groups.

	Group			
	BPD		Depression	
	Mean	(SD)	Mean	(SD)
Attachment-anxiety	55.0	(8.8)	47.8	(10.1)
Attachment-avoidance	56.1	(6.5)	40.8	(12.6)

Given that there was a significant difference in the proportion of male and female participants between the two samples, it was necessary to account for the effects of gender in the comparison of self-reported attachment in the two samples. Two-way factorial Analyses of Variance, using “group” and “gender” as between-participant factors, were performed separately for each of the RSQ subscales.

For the attachment-anxiety subscale, there was a main effect of group: participants in the BPD group reported significantly higher levels of attachment-anxiety than participants in the depression comparison group ($F_{1,3} = 8.41, p < 0.006$). The main effect of gender was not significant ($F_{1,3} = 0.003, p < 0.96$), and there was no significant interaction between group and gender ($F_{1,3} = 0.003, p < 0.96$). Cohen’s d was used to estimate the size of the difference in attachment-anxiety between the BPD and depression groups. The difference was large, $d = 1.31$. For a two-tailed hypothesis, with an alpha level of 0.05, observed power was 0.98.

For the attachment-avoidance subscale, there was a main effect of group: participants in the BPD group reported significantly higher levels of attachment-avoidance than participants in the depression comparison group ($F_{1,3} = 4.73, p < 0.037$). The main effect of gender was not significant ($F_{1,3} = 0.37, p < 0.55$), and there was no significant interaction between group and gender ($F_{1,3} = 0.24, p < 0.63$). Cohen’s d was used to estimate the size of the difference in attachment-anxiety between the BPD and depression groups. The difference was large, $d = 0.98$. For a two-tailed hypothesis, with an alpha level of 0.05, observed power was 0.83.

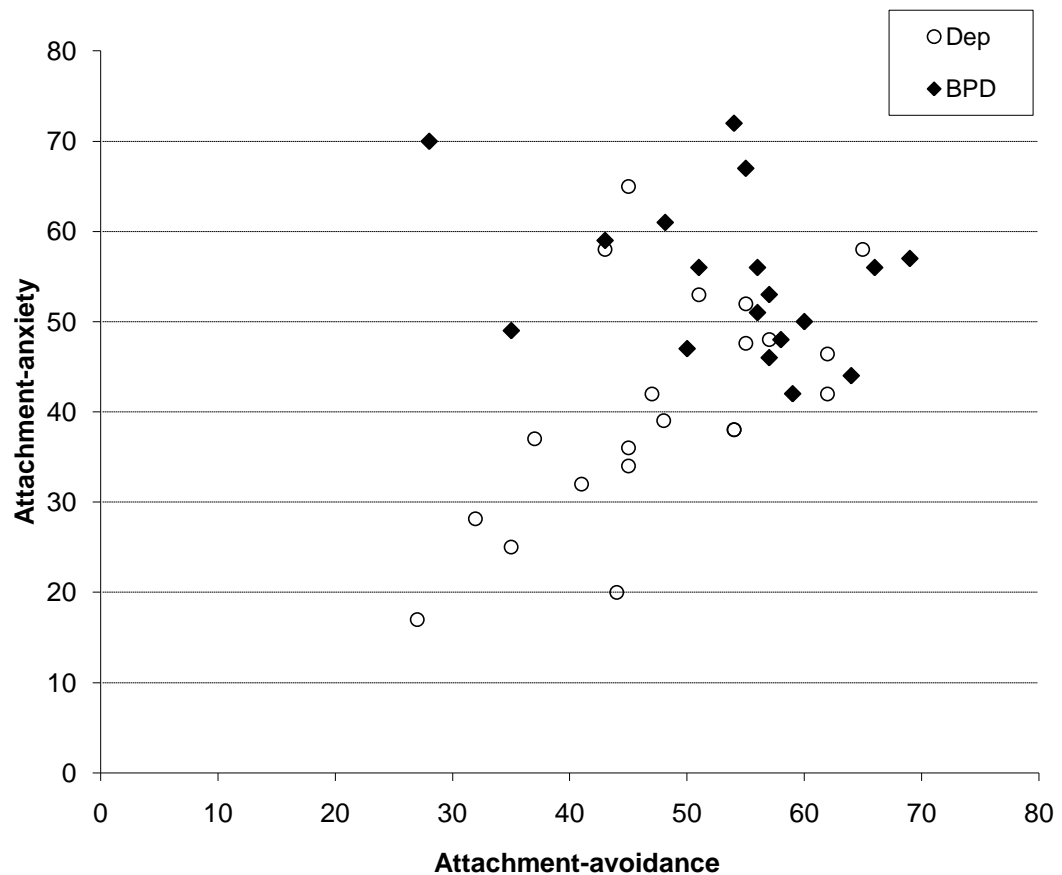
In order to investigate the contribution of current mood state, depression and anxiety scores from the HADS were included in the analysis of variance for each RSQ subscale. Separate HADS anxiety and depression subscales were dichotomised to obtain two levels of independent variables: normal to mild (scores of 0-10) and moderate to severe (scores of 11 to 21). In the analysis of variance for attachment-anxiety, there was no main effect of HADS depression ($F_{1,7} = 1.28, p < 0.266$). There was a main effect of HADS anxiety ($F_{1,7} = 5.98, p < 0.022$). However the difference between the two groups on the attachment-anxiety

subscale remained significant ($F_{1,7} = 6.36, p < 0.018$). There were also significant interactions between group and HADS anxiety ($F_{1,7} = 4.28, p < 0.049$) and between group and HADS depression ($F_{1,7} = 5.43, p < 0.028$). None of the other interactions were statistically significant.

In the analysis of variance for attachment-avoidance, there was no main effect of HADS depression ($F_{1,7} = 3.01, p < 0.095$) or HADS anxiety ($F_{1,7} = 2.02, p < 0.167$). The difference between the two groups on the attachment-anxiety subscale remained significant ($F_{1,7} = 5.87, p < 0.023$). None of the interactions were statistically significant.

In the combination of hypotheses 1a and 1b, there is an implied hypothesis regarding security of attachment. According to Bartholomew's (1990) conceptualisation of attachment dimensions, low attachment-anxiety and low attachment-avoidance are characteristic of secure attachment style. High scores on both dimensions are consistent with fearful/unresolved insecure styles of attachment. Low attachment-anxiety with high attachment-avoidance corresponds to dismissing attachment style, and low attachment-avoidance with high attachment-anxiety corresponds to preoccupied attachment style. Although a lack of normative data for the RSQ precludes the possibility of contextualising the present data within these attachment style categories, it is useful to explore how the scores of the groups occupy this two-dimensional space, relative to one another. Therefore, participants' attachment-avoidance scores were plotted against their attachment-anxiety scores in a scatter diagram (figure 4.1). Participants with BPD tend to fall in to the upper right quadrant of the graph, reflecting high attachment-avoidance and high attachment-anxiety. Many of the depressed participants also fall in the upper right quadrant; however, this group is also distributed in the lower left quadrant of the graph: low attachment-avoidance, low attachment anxiety. Therefore the depressed participants demonstrate a range along the continuum of security; and the participants with BPD tend to cluster towards the insecure end of this continuum.

Figure 4.1 Scatter diagram of attachment-avoidance against attachment-anxiety



4.3 Metacognition

Psychometric Properties of the Metacognition Questionnaire

The construct validity of the MCQ-30 has already been evaluated and factor analysis has supported a five-factor structure (Wells & Cartwright-Hatton, 2004). Therefore the original scoring method is used in the results reported here. The internal consistency of the MCQ-30, as applied to the data gathered in the present study, was verified by calculating Cronbach's Alpha for the total scale and the five subscales. These are presented in Appendix C.3. In the clinical control group alpha scores for the subscales ranged from 0.83 to 0.91, demonstrating good to excellent internal consistency. In the BPD group four of the subscales demonstrated good to excellent consistency, (0.82 to 0.91), and the 'positive beliefs about worry scale' had an alpha score of 0.67, demonstrating acceptable reliability.

Metacognition in BPD and Depression

Hypothesis 2: “There will be a significant difference between scores of the BPD group and the depression group on the Metacognitions Questionnaire (non-directional hypothesis).”

The mean overall MCQ-30 score and the five mean MCQ-30 subscale scores and standard deviations were calculated for the two groups and are presented in Table 4.4. The distributions of the five subscales and the total MCQ-30 did not appear to be normally distributed from examination of histograms and box-plots, therefore parametric methods of analysis were not considered to be appropriate.

Table 4.4 Metacognitions Questionnaire mean scores, subscale scores and standard deviations in BPD and depression groups.

	Group			
	BPD		Depression	
	Mean	(SD)	Mean	(SD)
Cognitive confidence	16.5	(5.6)	12.5	(5.5)
Positive beliefs	13.0	(4.0)	10.0	(3.6)
Cognitive self-consciousness	16.8	(4.8)	17.9	(4.2)
Uncontrollability and danger	19.4	(3.5)	15.0	(5.4)
Need to control thoughts	16.8	(5.1)	12.0	(4.8)
Total	82.5	(16.5)	67.3	(17.5)

The Mann Whitney U test was used to compare the MCQ-30 subscale and total scores of the two groups. The participants diagnosed with BPD scored significantly higher than the depression group on the overall MCQ-30 score ($U = 106$, $z = -2.53$, $p < 0.011$). They also scored significantly higher than the depression group on four of the subscales: ‘cognitive confidence’ ($U = 114.5$, $z = -2.31$, $p < 0.021$), ‘positive beliefs’ ($U = 115.0$, $z = -2.30$, $p < 0.021$), ‘uncontrollability and danger’ ($U = 91.5$, $z = -2.93$, $p < 0.003$) and ‘need to control thoughts’ ($U = 99.5$, $z = -2.17$, $p < 0.007$). There was no significant difference between the two groups on the “cognitive self-consciousness” scale ($U = 176.0$, $z = -0.64$, $p < 0.523$).

As non-parametric methods do not allow the possibility of controlling for the effects of additional variables, a four factor analysis of variance was used to explore the contribution of anxiety, depression and gender to overall metacognition score. Separate HADS anxiety and depression subscales were dichotomised to obtain two levels of independent variables: normal to mild (scores of 0-10) and moderate to severe (scores of 11 to 21). The difference in total MCQ-30 score between the two groups remained significant ($F_{1,11} = 11.37$, $p <$

0.002). There was a main effect of HADS anxiety ($F_{1,11} = 12.58, p < 0.001$), but no main effect of HADS depression ($F_{1,11} = 0.20, p < 0.662$). There were significant interactions between group and HADS anxiety ($F_{1,11} = 7.49, p < 0.011$); between group and HADS depression ($F_{1,11} = 8.95, p < 0.006$); between HADS anxiety and gender ($F_{1,11} = 8.94, p < 0.006$); between HADS depression and gender ($F_{1,11} = 5.04, p < 0.033$); and between group and gender ($F_{1,11} = 5.80, p < 0.023$).

4.4 The relationship between attachment and metacognition

Hypothesis 3a: There will be a significant association between attachment-anxiety and metacognition scores.

Hypothesis 3b: There will be a significant association between attachment-avoidance and metacognition scores.

In order to examine the strength of any association between self-reported attachment and metacognition. Spearman's correlational analysis was performed on the RSQ and MCQ-30 scores from all participants, (see table 4.5).

Table 4.5 Correlations between RSQ and MCQ-30 scores (Spearman's rho).

MCQ-30		RSQ	
		Attachment-anxiety	Attachment-avoidance
Cognitive confidence	Correlation Co-efficient	0.420**	0.393*
	Significance (two-tailed)	0.007	0.012
Positive beliefs about worry	Correlation Co-efficient	0.375*	0.315*
	Significance (two-tailed)	0.017	0.047
Cognitive self-confidence	Correlation Co-efficient	0.137	0.097
	Significance (two-tailed)	0.398	0.552
Uncontrollability and danger	Correlation Co-efficient	0.639**	0.258
	Significance (two-tailed)	0.000	0.108
Need to control thoughts	Correlation Co-efficient	0.540**	0.428**
	Significance (two-tailed)	0.000	0.006
Total Score	Correlation Co-efficient	0.543**	0.410**
	Significance (two-tailed)	0.000	0.009

* $p < 0.05$; ** $p < 0.01$

The total MCQ-30 scores are moderately positively correlated with both attachment-anxiety and attachment-avoidance. Three of the MCQ-30 subscales have a moderate, positive correlation with attachment-anxiety, and one has a low, positive correlation with attachment anxiety. One of the MCQ-30 subscales has a moderate, positive correlation with attachment-avoidance, and two of the subscales have a low positive correlation with attachment-avoidance.

4.5 Prediction of severity of clinical symptoms

Hypothesis 4: Attachment-avoidance, attachment-anxiety and metacognition scores will be predictive of severity of clinical symptoms.

A linear regression analysis was performed in order to assess whether self-reported attachment or metacognition contributed to current mood, as assessed by the HADS. Using the enter method, a significant model emerged ($F_{3,36} = 8.77$, $p < 0.001$). Together, attachment-avoidance, attachment-anxiety and MCQ-30 total score accounted for 37 percent of the variation in HADS score (adjusted R^2). However, only the MCQ score was a

significant predictor, with a standardized regression co-efficient of 0.55 ($p < 0.003$). The effect size for this regression was $f^2 = 0.79$ and observed power was calculated as 0.95.

A separate linear regression analysis was performed in order to assess whether self-reported attachment or metacognition contributed to current level of broader clinical distress, as assessed by the CORE-OM. Using the enter method, a significant model emerged ($F_{3,36} = 17.7$, $p < 0.001$). Together, attachment-avoidance, attachment-anxiety and MCQ-30 total score accounted for 56 percent of the variation in current psychological distress (adjusted R^2). However, only the MCQ score was a significant predictor, with a standardised regression co-efficient of 0.53 ($p < 0.001$). The effect size for this regression was $f^2 = 1.47$ and observed power was calculated as 0.99.

5. Discussion

5.1 Summary of findings

Attachment-anxiety and attachment-avoidance, as measured by the RSQ, were found to be significantly higher in the BPD group than the depression group. The primary experimental hypotheses are therefore retained. Participants with BPD scored significantly higher on the MCQ than those with symptoms of depression, indicating a greater degree of maladaptive content in their metacognition. The BPD group scored significantly higher than the depression group on four of the MCQ subscales: 'cognitive confidence', 'positive beliefs about worry', 'uncontrollability and danger', and 'need to control thoughts'. There was no significant difference between the two groups on the 'cognitive self-confidence' subscale. The exploratory hypothesis, that there would be a significant difference between scores of the BPD group and the depression group on the MCQ is retained. The results suggest that people with BPD perceive themselves as having greater memory problems than those with depression. They also demonstrated an increased tendency to view their thoughts as dangerous and uncontrollable, and believed that there is a necessity to control their thoughts.

Correlational analysis indicated that there was an association between MCQ-30 scores and both attachment-anxiety and attachment-avoidance on the RSQ. Therefore the hypothesis that there is a relationship between metacognition and self-reported attachment style is retained. Attachment-anxiety correlated with metacognition scores slightly more strongly than attachment-avoidance. Amongst the MCQ-30 subscales, the strongest correlations were between 'uncontrollability and danger' and attachment-anxiety; and 'need to control thoughts' and attachment-anxiety. The highest correlation between attachment-avoidance and any of the subscales was also with the 'need to control thoughts' subscale. The 'uncontrollability and danger' subscale did not correlate with attachment-avoidance.

Participants' total scores on the MCQ-30 were predictive of current mood and severity of clinical symptoms. However, the regression analysis indicated that neither attachment-anxiety nor attachment-avoidance dimensions were predictive of clinical symptoms. These results should be considered with caution, given the small sample size.

Adult Attachment in BPD

There are a limited number of studies that have compared adult attachment style in BPD and depression using self-report methods. The key study to date administered the Relationships Questionnaire (RQ)(Bartholemew & Horowitz, 1991) to patients with depression, patients with BPD, and a group of non-borderline patients, (Choi-Kain *et al.*, 2009). Prior to this there had been four studies of relevance (Alexander, 1993; Brennan &

Shaver, 1998; Dutton, Saunders, Starzomski, & Bartholomew, 1994; Hoermann, Clarkin, Hull, & Fertuck, 2004). However, none had included a representative clinical sample and were criticised for inadequate diagnostic assessment (Choi-Kain *et al.*, 2009). By contrast, Choi-Kain *et al.* (2009) used representative clinical and comparison samples and administered extensive diagnostic assessment including reliable and valid structured clinical interviews. Their study found that the BPD and depression groups were significantly less secure than the non-borderline group. The BPD group were significantly more fearful, and more pre-occupied than the depressed, and non-borderline groups. There was no significant difference between groups on the dismissing category scores (Choi-Kain *et al.*, 2009). The results of the present study corroborate the findings of Choi-Kain *et al.* (2009), as the fearful category corresponds to both high attachment-anxiety and high attachment-avoidance on the RSQ, and the pre-occupied category corresponds to high attachment-anxiety. To some extent, the smaller effect size found between the depression group and the BPD group on attachment-avoidance is consistent with the findings of Choi-Kain *et al.* (2009) regarding the dismissing category, as this category is equivalent to high attachment-avoidance (Bartholomew, 1990). One criticism of the study by Choi-Kain *et al.*, (2009), acknowledged by its authors, is the choice of attachment measure. The RQ has not been as well evaluated as many other self-report attachment measures and the secure scale has poor internal consistency (Ravitz *et al.*, 2010). Choi-Kain *et al.* (2009) state that the RQ was selected for its practical qualities, particularly the ease of administration to a large sample, given that participants were also subject to extensive diagnostic assessment. To the author's awareness, there have been no published studies comparing RSQ scores in depression and BPD. Therefore the findings of the present study contribute to the limited research comparing self-reported attachment in depression and BPD.

Several studies have investigated self-reported attachment in BPD using a variety of assessment measures. Agrawal and colleagues (2004) reviewed thirteen studies of attachment in BPD of which seven used self-report measures: Attachment Styles Inventory (Sack, Sperling, Fagen, & Foelsch, 1996; Sperling, Sharp, & Fishler, 1991), Attachment Style Questionnaire (Fossati *et al.*, 2001), Attachment Self-report (Nickell, Waudby, & Trull, 2002), Reciprocal Attachment Questionnaire (Sack *et al.*, 1996; West, Keller, Links, & Patrick, 1993) RQ (Brennan & Shaver, 1998; Dutton *et al.*, 1994), RSQ (Dutton *et al.*, 1994). Many of the studies did not recruit participants from clinical sources; participants were often assessed on continuous measures of borderline traits, rather than using diagnostic tools; the different attachment measures targeted a range of relationships; and sample sizes were small (Agrawal *et al.*, 2004). However, the authors reported that all of the studies had demonstrated a strong association between BPD and attachment insecurity. They identified a consistent finding that the participants with BPD or BPD traits were either classified as having an unresolved attachment style on the AAI, or belonged to the equivalent fearful

category when assessed using self-report instruments, (Agrawal *et al.*, 2004). In addition, they noted that, on self-report measures that allowed for more than one style of attachment, secondary classification of these participants was pre-occupied. The pre-occupied attachment style is characterised by higher levels of attachment-anxiety on continuous measures (Bartholomew & Horowitz, 1991). The findings of the present study are therefore consistent with the existing literature regarding the profile of attachment in BPD.

Although the current study employed a self-report measure of attachment, the findings correspond to those found in studies applying the AAI to people with BPD. AAI transcripts may be coded to yield either three or four classifications: secure, pre-occupied, and dismissing attachment state of mind; and an unresolved or unclassifiable attachment (Dozier, Stovall-McClough, & Albus, 2008). There is evidence that, where only three categories are employed, the pre-occupied category is assigned to the highest proportion of participants with BPD (Fonagy *et al.*, 1996; Rosenstein & Horowitz, 1996; Stalker & Davies, 1995). However, where the unresolved classification is added, the majority of people with BPD are assigned to this category (Barone, 2003; Diamond, Stovall-McClough, Clarkin, & Levy, 2003; Stovall-McClough & Cloitre, 2003). Similarly, Agrawal *et al.* (2004) found that all of the five AAI studies they reviewed had demonstrated that people with BPD were predominantly classified as unresolved in their attachment style, with pre-occupied secondary classifications. More recently, a large scale review of more than 10,000 administrations of the AAI in over 200 studies across 25 years was conducted by Bakermans-Kranenburg and van Ijzendoorn (2009). They also concluded that there was an association between disorders with an internalizing dimension (in particular BPD) and higher rates of unresolved and pre-occupied attachment style classifications (Bakermans-Kranenburg & van Ijzendoorn, 2009).

In order to draw meaningful conclusions regarding attachment in BPD, the results of this study should be interpreted with reference to findings relating to attachment in depression. Evidence for an association between attachment states of mind and depression is inconsistent (Dozier *et al.*, 2008). Some studies have reported that preoccupied categories are more common in depression than other attachment styles (Cole-Detke & Kobak, 1996; Fonagy *et al.*, 1996; Rosenstein & Horowitz, 1996). However, other studies have indicated that depression is associated with a dismissing attachment classification (Patrick, Hobson, Castle, Howard, & *et al.*, 1994). According to McMahon (2006), there is convincing evidence that depression is associated with insecure attachment states of mind, but insufficient power to look at individual classification (Dozier *et al.*, 2008). This is a common limitation in attachment studies, as the practicalities of using the AAI constrain sample size. Bakermans-Kranenburg and van Ijzendoorn's (2009) extensive review concluded that depression groups demonstrated higher rates of dismissing and pre-occupied attachment styles.

Dozier and colleagues (2008) raised the issue of heterogeneity in depressive disorders, and its implications for attachment studies. They highlight the distinction between different forms of depressive disorder, for example major depression and dysthymia; the effect of severity and the theory that different forms of depressive disorder are differentially reliant on internal and external coping strategies, (Dozier *et al.*, 2008). They suggest that preoccupied states of mind are consistent with internalizing symptoms whereas dismissing states of mind are consistent with externalizing symptoms (Dozier *et al.*, 2008). It is argued that systematic differences (due to exclusion criteria) in the inclusion of participants with internalizing and externalizing symptoms in studies may account for the differences in attachment classifications (Dozier *et al.*, 2008). The present study emphasised the inclusion of people with depressive symptoms, and not symptoms of anxiety or suspected BPD traits. It is therefore likely that the recruitment strategy was biased towards the exclusion of patients with internalizing symptoms. The predominance of avoidant attachment traits in depressed respondents would account for the smaller difference in scores between the two groups on attachment-avoidance scores than the difference between them on the attachment-anxiety dimension. Therefore, rather than there being lower attachment-avoidance than attachment-anxiety in BPD, the size of the difference is reduced by the depressed participants' tendency to report higher attachment-avoidance.

Attachment and the development of BPD

Dozier *et al.* (2008) argued that the characteristic features of BPD themselves indicate the relevance of attachment theory to the development of the disorder: an unstable sense of self; sense of others as idealised/devalued; fear of abandonment by idealised other; instability of internal representations results in emotional volatility; interpersonal relationships are intense and unstable; and perceived rejection results in anger and dysphoria. However, given that BPD is diagnosed according to problems in interpersonal relationships, the evidence for impaired attachment style in BPD has been accused of circularity (Agrawal, 2004). Therefore, there is a need to explore the aetiological role of attachment in BPD. As yet there have been very few longitudinal studies that have examined the link between attachment in infancy and later psychopathology in adulthood, (Dozier *et al.*, 2008). Lyons-Ruth and colleagues (2008) are conducting the only longitudinal research to have investigated the relationship between infant attachment behaviour and incidence of BPD. The sample comprises 56 families identified as high risk, and followed since the child's infancy (Lyons-Ruth, 2008). It was found that poor quality of care and impaired maternal affective communication in infancy were predictive of later borderline symptoms at seven years (Lyons-Ruth *et al.*, 2005). These predictors are stronger than, and partially independent from disorganized attachment in infancy (Lyons-Ruth, 2008). However, these findings should be regarded with caution, as the longitudinal study has not yet examined the relationship between these predictors and incidence of BPD in adulthood. Elsewhere, it has

been argued that problems in attachment are a risk factor for BPD, (Bakermans-Kranenburg & van Ijzendoorn, 2009). There is certainly compelling evidence for association of problematic family conditions and development of BPD, and specifically evidence for early abuse (Dozier *et al.*, 2008). It has been found that 81 percent of people with BPD have experienced or witnessed physical or sexual abuse (Herman *et al.*, 1989), and 71 percent of women with BPD report having been sexually abused (Ogata *et al.*, 1990). Reported early abuse in BPD has been confirmed by hospital records from childhood (Dozier *et al.*, 2008). Higher rates of prolonged separation in childhood have also been implicated, especially maternal separation (Zanarini, 2000). Zanarini (2000) also found frequent circumstances where there was emotional neglect when a caregiver physically present. Arguably, it is the combination of trauma or fear with the lack of support and nurturance from a caregiver, or 'fright without solution' that is implicated in the development of BPD (Hesse & Main, 2006).

Bowlby's (1973) concept of the internal working model has been central to theoretical understanding of the role of attachment in BPD. An internal working model is defined as a person's mental representation of the external world, including their representation of self, other and the relation of self and other (Bowlby, 1980). Where attachment style is disorganized, a child has an internalised model of their caregivers as incompetent/inconsistent and a model of self as inconsistently valued (Agrawal *et al.*, 2004). Agrawal *et al.* (2004) argue that this is a central feature of the BPD diagnosis. It is thought that attachment security during childhood is a prerequisite for the individual to develop the capacity to understand own and other's mental states (Fonagy *et al.*, 2004). Fonagy and colleagues argue that insecure, disorganised relationships are characterised by confusing, frightening and harmful mental states in the caregiver, and therefore cause the child to inhibit reflection (Dozier *et al.*, 2008). The experience of trauma in the absence of support from a caregiver prevents the child from integrating aspects of the caregiver into single models of self and other (Main & Hesse, 1990) and therefore impinges on development of capacity to represent mental states. Hesse and Main (2006) observe that individuals with disorganised attachment experience a collapse of attentional and behavioural strategies as a result of stress. They view the disorganized/disorientated behaviour elicited in the Strange Situation, and the monitoring lapses of adults in the AAI, as low level dissociation (Hesse & Main, 2006). Therefore lapses in attention and behaviour monitoring are attributable to experiences of a caregiver as frightened or frightening (Hesse & Main, 2006). BPD is argued to be a disorder of attachment with associated deficits in capacity to represent mental states (Bateman & Fonagy, 2008). Fonagy and Bateman (2008) proposed that, in BPD, the capacity to represent mental states becomes unstable during emotional arousal as a result of hyper-responsiveness of the attachment system. The symptoms of BPD are accounted for by the activation of modes of psychological functioning that developed in the context of disruption of early attachment relationships (Fonagy & Bateman, 2008). Their model views

attachment processes, traumatic experiences in the context of attachment, and their interaction with neurobiological development in the context of innate vulnerabilities, as key aetiological factors in the development of BPD (Fonagy & Bateman, 2008). The present finding that people with BPD report high attachment-anxiety and attachment-avoidance is consistent with this theoretical stance.

Metacognition

There are various concepts and terms relating to the construct of metacognition. Metacognition is 'cognition applied to cognition and may be defined as any knowledge or cognitive process that is involved in the appraisal, control, and monitoring of thinking' (Wells, 2007, p.18). In its broadest definition, metacognition is viewed as a central process within mental and interpersonal systems by a range of theoretical approaches; most notably psychodynamic theory (e.g. Fonagy *et al.*, 2004), developmental psychology (e.g. Hesse, 2008), and cognitive psychology (e.g. Wells, 2000). The hypothesis for an association between attachment and metacognition is founded on the theory that a person's capacity to form internal representations of mental states develops in the context of the attachment relationship. This theory has a wide variety of proponents within developmental psychology and psychodynamic approaches and has been inferred in several concepts: the internal working model (Bowlby, 1973); object-relations theory (e.g. Kernberg, 1982; Winnicott, 1965); and representational mental models (Johnson-Laird, 1983). Fonagy and colleagues (2004) view the capacity to represent mental states, or to 'mentalize', as intrinsically linked with the attachment system.

It is widely acknowledged that metacognition is a multifaceted construct (e.g. Wells, 2007). Main (1991) highlights the distinction between metacognitive knowledge and metacognitive monitoring. *Metacognitive knowledge* is the term applied to the capacity to view 'cognitive processes as objects of reflection' (Main, 1991, p. 134). It is argued to be a second-order representation, or 'meta-representation', by which an individual is able to consider their own and other people's cognitive processes, (Main, 1991). *Metacognitive monitoring* is described as a process by which an individual plans, monitors and evaluates their activities, and essentially means the regulation of cognition, (Main, 1991). Monitoring involves the self-regulation of knowledge that allows cognitive reorganisation when concurrent thoughts are contradictory (Main, 1991). Wells (2007), following Main's (1991) distinction, defines metacognitive knowledge as 'information that individuals have about their own thinking and about strategies that affect it'; and metacognitive regulation as 'the strategies used to change the status of thinking' (Wells, 2007, p. 18).

The measure used by the present study assesses the extent to which a person's metacognitions are maladaptive, and as such it examines a very specific aspect within the broader concept of mentalization. To the author's knowledge there have been no studies

that have investigated the presence of maladaptive metacognitions, and their association with attachment style in personality disorder. However, these issues have been explored within several mental health disorders, including anxiety and depression (Wells & Carter, 2001). People with psychosis have also demonstrated higher scores on the MCQ than several other patient groups (Morrison, French, & Wells, 2007; Morrison & Wells, 2003). An association between metacognitive development and attachment style in infancy has been demonstrated (Fonagy, 1997; Meins *et al.*, 2002).

Research into the role of attachment in the development of personality disorders has grown in the last twenty years, however few studies have addressed the implications of impaired attachment on metacognitive processes in BPD. Much of the current research on metacognition and attachment uses the concept of metacognition as it is defined by psychodynamic schools of thought. In this context the term is often used interchangeably with mentalization. Awareness of inner states is defined as 'the ability to detect and refer to ... one's thoughts and emotions' (Colle *et al.*, 2010, p.181). Integration is described as the construction of 'a bird's-eye view of one-self relating with others and solving inconsistencies among the different representations' (Colle *et al.*, 2010, p. 185) and as such shares features of Main's (1991) concept of metacognitive monitoring.

Colle *et al.* (2010) describe profiles of metacognitive deficits in different personality disorders. They reviewed existing research and used transcriptions of psychotherapy sessions to examine various aspects of metacognition in several people with different personality disorders. They found that metacognition was subject to selective impairment in individuals with personality disorder; most patients were impaired on more than one aspect of metacognition; and these impairments were not exclusive to particular personality disorders (Colle *et al.*, 2010). Their research indicated that people with BPD tended to have relatively intact monitoring of inner states, with impaired integration and differentiation. This distinction provides a useful context for the measurement of maladaptive metacognition, as in order to complete a scale such as the MCQ-30 the participant must have an awareness of their mental states. The psychometric properties of the scale in the BPD group assessed in this study, and the observation that participants with BPD were able to complete the questionnaire, indicate that these participants were able to access their mental states. This is consistent with the profile of metacognitive deficits in BPD suggested by Colle *et al.* (2010). It could be hypothesised that avoidant forms of personality disorder, for example, may experience more difficulty in accessing the information necessary to respond to the MCQ-30 items.

The items of the MCQ require the respondent to make judgements about their own cognitions. Therefore the MCQ-30 primarily assesses a person's awareness of mental states, rather than their ability to integrate mental states during attachment activation, the findings of this study suggest that participants with BPD did have awareness of their mental

states, consistent with Colle *et al.*'s (2010) findings. In addition, it appears from these results that people with BPD report higher levels of maladaptive metacognition than people with depression. Given that people with depression are known to engage in unhealthy metacognitive processes (e.g. rumination)(Papageorgiou & Wells, 2003), this finding indicates that the problem is more severe in BPD.

Metacognition and psychopathology

At present, the clinical applications of metacognition have primarily focused upon depression and anxiety (e.g. Wells, 2000). However, maladaptive metacognition is also present in disorders involving thought intrusion (e.g. Wells & Papageorgiou, 1998). Wells argues that formulation of metacognition is applicable to all disorders (Wells, 2007) and the role of metacognition in the maintenance of psychological distress has theoretical relevance to BPD. It is thought that maladaptive metacognition contributes to emotional disturbance via a mechanism that comprises heightened self-focus and threat monitoring, repetitive negative thinking and rumination and poor coping strategies (Papageorgiou & Wells, 2003). With regard to depressive disorders, Papageorgio and Wells argue that the cognitive processes that are required for reorganizing metacognitive knowledge and developing effective coping strategies are impaired by the effects of perseverative negative thinking, and that this in turn impacts on emotional regulation (Papageorgiou & Wells, 2003). The findings of this study indicate that people with BPD have more maladaptive metacognition than people with depression, which would suggest that they too are subject to interference in their metacognitive monitoring. Therefore although they have awareness of their mental states, they are impaired in their ability to restructure this self-knowledge.

It was observed in this study that the MCQ-30 subscales demonstrating the strongest association to attachment (particularly attachment-anxiety) were 'uncontrollability and danger' and 'need to control thoughts'. Also, the items of these subscales were endorsed more strongly by participants with BPD than with depression. Insecure attachment is associated with a lack of emotional containment (Fonagy *et al.*, 2004). Also, BPD has been associated with invalidation of emotional experiences (Linehan, 1993). It may therefore be that metacognitive beliefs develop as maladaptive strategies for emotion regulation, in the context of insecure attachment relationships. The caregiver facilitates the processing of emotional experience and the development of the child's own internal affect regulation processes. A child whose parent is 'frightened or frightening' is likely to experience the overwhelming mental states of their attachment figure, without having access to a caregiver who is able to contain and process the child's experience of distress (Hesse & Main, 2006). Similarly, having a parent whose mind is either unavailable, or overwhelming to the child may cause the child to develop metacognitive strategies for affect regulation that involve avoiding distressing cognitions, in order to manage uncontained emotions.

It was clear from the results of this study that the BPD group perceived themselves as having greater difficulties with their memories than the depressed group, and 'cognitive confidence' was associated with attachment style. There are several potential explanations. Firstly, it has been proposed that lack of confidence in cognitive functioning is a 'by-product' of depressed mood (Papageorgio & Wells, 2003). It may be that this is experienced to a larger degree in the BPD group because people with BPD are prone to frequent episodes of affective disorder (National Collaborating Centre for Mental Health, 2009). However, this explanation does not readily account for the association with attachment. Alternatively, the finding may be understood in the context of the high degree and frequency of dissociative experiences that have been observed in BPD (Ross, 2007). It is thought that trauma and abuse in childhood leads to the use of dissociation as a strategy for protection (Herman, 1992). In low-level dissociative states, there is less access to working memory processes; frequent experience of minor lapses of memory and concentration are likely to result in the subjective experience of a poor memory. During extreme dissociation, a person is often unaware of their actions, and therefore unable to recollect events at a later time. This explanation of reported memory problems in BPD would be compatible with an attachment perspective. Additionally, the participants' responses are perhaps reflecting deficits in executive functioning. It is thought that experiences of trauma in the context of the attachment relationships affect neurobiological development (Perry, 1997). This would also explain why the participants in the BPD sample were reporting ongoing memory deficits, even when not currently depressed.

Maintenance of psychological and emotional distress

Neither attachment-anxiety nor attachment-avoidance was predictive of severity of clinical symptoms as assessed by the CORE-OM. As there has been little research on this issue, there are no previous studies with which to compare this result. It should be noted that the CORE-OM is a measure of state condition, in that it assesses psychosocial issues within the present week (Barkham *et al.*, 2005). In contrast, research and theory surrounding attachment style indicates that attachment-anxiety and attachment-avoidance are traits that develop in infancy and persist into adult relationships (Hazan & Shaver, 1987). The attachment system is activated in the context of interpersonal events, such as separation or threatened abandonment (Bowlby, 1969). Although people with BPD are more prone to distress as a result of interpersonal events due to insecure attachment style, proximal factors are required to trigger distress (Linehan, 1993). Therefore, it is unsurprising that attachment style alone is not predictive of severity of clinical symptoms. Furthermore, the BPD group comprised participants that were currently functioning well (discussed below), and were therefore likely to be reporting low levels of distress relative to incidence of crises.

The MCQ-30 scores were predictive of psychological distress as measured on the CORE-OM and HADS. This preliminary data suggests that maladaptive metacognition may contribute to severity of clinical symptoms. Again, there are few studies that have examined the relationship between metacognition and current levels of distress in BPD. Carcione *et al.*, (2008) found that depth of metacognitive impairment, as measured by the Metacognitive Assessment Interview (MAI)(Semerari *et al.*, 2003), was correlated with severity of personality disorder. The present study assessed a different aspect of metacognition, and the CORE-OM is a general measure of psychological distress, rather than a measure of severity of personality disorder. Nevertheless, this finding lends support to the view that severity of metacognitive impairment is associated with the severity of the overall personality pathology (Colle *et al.*, 2010). These results suggest that maladaptive metacognition may have a role in the maintenance of clinical distress and current mood in patients with BPD.

5.2 Psychometric properties of measures

Relationship Scales Questionnaire

The question of how attachment style should be assessed is of central theoretical significance, particularly in the domain of adult attachment. Hazan and Shaver (1994) argue that it has been the assessment measures, rather than the theory, that has been the starting point for recent research in attachment. Griffin and Bartholomew (1994a) conducted a review of the measurement of attachment style. They argued that the method of measurement is central to the study of attachment style, as there are theoretical assumptions implicit in the measurement. They questioned whether the underlying construct of attachment is best represented by observed variables that are measured: dimensionally, categorically, or according to prototypes (Griffin & Bartholomew, 1994a). They observed that the categorical approach assumes that people are characterised by discrete types and the dimensional approach assumes that people can be quantitatively ordered on independent dimensions (Griffin & Bartholomew, 1994a). There are advantages and disadvantages of each approach, for example: using categories may represent the 'true phenomenon', but encourages stereotyping and is subject to confirmation bias; dimensions allow for a greater degree of individual variation and allow for the use of a wider range of powerful statistical analyses, however, they are less convenient than categories in clinical use (Griffin & Bartholomew, 1994a).

Bartholomew and Horowitz (1991) systematised the concept of the internal working model (Bowlby, 1973) into a two dimensional model comprising a self and other dimension. Rather than using either dimensional or categorical measurement, they dichotomised the dimensions to yield four attachment prototypes (secure, dismissing, pre-occupied and fearful). They constructed the Relationships Questionnaire (Bartholomew & Horowitz, 1991)

as a self-report measure of these prototypes, on which an individual scores themselves on a continuous scale on each of four vignettes. The RSQ may be used to measure these prototypes indirectly, however, the dimensional approach to scoring was adopted within this study for a number of reasons. Firstly, the factor analysis indicated two factors, whereas four factors would have been required to support the four prototype model. Secondly, there are validity issues with the RQ and RSQ prototypes, most notably that the secure prototype shows lower correlations with other measures of attachment than the other prototypes, perhaps indicating that security of attachment is less amenable to the self-report format (Griffin & Bartholomew, 1994a).

The results of the factor analysis for the data obtained from this sample add further support to the evidence (Kurdek, 2002) for a two dimensional model comprising attachment-anxiety and attachment-avoidance. In contrast to Collins and Read (1990) no evidence for a third factor representing overall security was obtained. The internal consistency of the two subscales and the overall measure was good to excellent in both groups (α ranged from 0.78 to 0.89), similar to those obtained by previous studies (Kurdek, 2002). The two dimensions demonstrated low, but significant correlations. Although it was not possible to examine the convergent validity of the RSQ in this study, it has been found to correlate with other measures of attachment in previous studies (Backstrom & Holmes, 2007).

Metacognitions Questionnaire

The internal consistency of the MCQ subscales was good to excellent, in both groups. The alpha scores for the total scale were 0.90 and 0.94 in the BPD and depression group, respectively, representing excellent internal consistency. The stability of the MCQ-30 was previously assessed by Wells and Cartwright-Hatton (2004) and there was no significant differences on the subscales or total score between two administrations. Test-retest correlations were significant, ranging from 0.59 to 0.87 for the subscales and 0.75 for the total scale (Wells & Cartwright-Hatton, 2004). The construct validity of the scale was examined using exploratory factor analysis; the authors concluded that the five factor structure was a good fit for the measure, and that factor composition replicated that of the full version of the MCQ, (Wells & Cartwright-Hatton, 2004).

5.3 Qualitative Observations

Although this was a quantitative study, several relevant qualitative observations were noted during data collection. The most frequent observation was that the participants with BPD tended to react strongly to the questionnaires, and reported a sense of recognition of the attitudes and circumstances described by the RSQ and MCQ-30 items. This supported the opinion of Colle *et al.* (2010) that people with BPD do not have impaired awareness of their mental states. In fact it was clear that completing the questionnaire was

itself a process that required the participant to access their mental representations of themselves. Many participants cited examples of their own behaviour in order to support their responses. They also demonstrated a tendency to offer additional information about their problems, and lacked defined boundaries in their conversations with the researcher. It was also noticed that, for some people the items were distressing. The nature of the questionnaires requires participants to tolerate distressing thoughts. All but one of the BPD participants preferred that I read out the items and fill in the questionnaire, perhaps suggesting that they had a need for support in facing these issues. Several participants were interested in the association between their childhood experience, attachment styles and their current problems, a link that they made themselves, and some commented that it “made sense” to research these issues.

One participant commented that she would have endorsed the MCQ-30 items much more strongly before attending DBT, specifically that she now “stepped back” and thought through her response to difficult interpersonal problems, whereas before she would have reacted without thinking. It is interesting to consider that the skills that she learned during DBT had allowed her to experience situations in a different way, and lead to adjustments in her metacognitive knowledge which allowed her to view herself as someone who was able to make choices about her behaviour.

One participant said that she would have scored the RSQ items much higher (i.e. higher attachment-anxiety/attachment-avoidance) if it was not for her positive relationship with her husband, whom she “had tested” over the years and now trusted. This anecdotal evidence supports the view that attachment style can change (Hamilton, 2000), possibly due to situational factors, personality variables and changes in relational schema (Davila *et al.*, 1999).

5.4 Methodological issues and limitations

Several sources of bias were identified in the recruitment process and these were mainly attributable to the opportunistic sampling method. Firstly, it was observed that, in the BPD group, there was a bias towards the recruitment of people with less severe presentations than are generally seen in the wider population. The study’s exclusion criteria stated that those currently experiencing crisis should not be referred, and in-patients were also excluded, meaning that the most severe cases would certainly have been excluded. Many of those recruiting these participants explicitly reported that they were referring them because they were “doing well” or were “well enough”. Referrers did not pass on invitations to patients whom they considered too impaired to participate, or if they were concerned that participation may have a negative impact on the patient’s well-being. Secondly, the act of volunteering for participation may have introduced bias: self-selection may be associated

with qualities that are present within particular subgroups of people with BPD, such as a tendency to seek involvement with services (National Collaborating Centre for Mental Health, 2009). Conversely, highly avoidant individuals would have been unlikely to come forward to participate (Tait, Birchwood, & Trower, 2003). It is known that BPD is characterised by extreme distress, and associated strategies to avoid high levels of emotion (Linehan, 1993). For some people, participating in the study would have required an ability to tolerate a certain amount of anxiety, and, given that the subject matter directly referred to problems they were experiencing, may have been distressing. Therefore, those who were able to participate would have been people who were able to tolerate distress sufficiently to complete the questionnaire. In addition, contacting the researcher and attending the appointment required a level of personal organisation that may have been difficult for people with ongoing social and psychological problems. Thirdly, the control group was recruited via the Psychology Department, which is a tertiary service and therefore severe presentations were more likely to be over-represented. There was an attempt to address this by recruiting from the Guided Self Help service, however, relatively few participants were eventually recruited from this source. Overall, it would appear that the participants recruited to the BPD sample may have reflected less severe (current) presentations of BPD. There is also a possibility that more severe aspects of depression were represented within the clinical control group. With regard to the impact of this bias on the results it is reasonable to predict that, had the sample been more representative of BPD, the difference would have been greater. It is not thought that these biases are likely to have inflated the results obtained in this study.

Group equivalence was examined within the statistical analyses. Although the depression group had an older age range, the mean age of participants was found to be similar across the two groups. Unfortunately the groups differed significantly on the ratio of male to female participants, and females were over-represented in the BPD group. This is likely to be due to the tendency for more females than males with BPD to present to services (National Collaborating Centre for Mental Health, 2009). The impact of these variables was investigated statistically, age was not significantly different across the two groups, whereas gender was, and therefore gender was included as an independent variable in the analysis of variance. However, there was no main effect of gender on the RSQ scores, and there was no interaction between gender and attachment. It was not possible to assess the effect of gender within the analysis of metacognition between the two groups as the data was not suitable for parametric analysis. However, a nonparametric comparison of MCQ-30 scores for male and female participants, found that gender did not have a significant effect on metacognition. It appears that although there were differences in gender between the BPD and depression group these differences did not affect the findings.

The sample size for the study was small, however the findings relating to the main hypotheses had a large effect size and achieved sufficient power for comparative and regression analyses. Furthermore, these results are supported by similar findings in previous research (e.g. Choi-Kain *et al.*, 2009) and are consistent with current theoretical understanding of attachment in BPD (Dozier *et al.*, 2008). However, in the context of a small sample size, the findings regarding metacognition should be treated with caution until they have been replicated by further research. Nevertheless, these exploratory findings are important given that there is a lack of previous research on this particular aspect of metacognition in BPD. It should also be noted that the small sample size is in part due to problems in recruitment and retention that arise from issues inherent to BPD. This methodological limitation is one that is frequently observed in similar studies within this field (e.g. Patrick *et al.*, 1994).

An issue that is often observed to be a limitation in previous research is the method of assessing, or confirming psychiatric diagnoses (Choi-Kain *et al.*, 2009). However, this is an issue that is frequently observed in research within this field, due to the practical constraints of applying formal assessments (e.g. Patrick *et al.*, 1994). Many studies do not include structured clinical interviews to assess participants for personality disorder, some use case note review, or a brief screen (e.g. Fossati *et al.*, 2001). The psychiatric notes of the participants with BPD confirmed that they all had been diagnosed by a psychiatrist. However, in most cases, it was not clear precisely how the patient had been assessed for BPD. For some patients, a brief screen such as the Zanarini Rating Scale for Borderline Personality Disorder (Zanarini *et al.*, 2003) was present in the notes, but in no case was there evidence that a structured clinical interview had been performed. Additionally, as the participants were diagnosed by a range of psychiatrists, there is a potential lack of consistency in their diagnoses. Nevertheless, the histories of these participants were consistent with borderline personality presentation, detailing severe difficulties in the patients' interpersonal relationships throughout life, and frequently self-harm and suicidality. No features of BPD were identified in the notes of participants from the depression group.

The BPD diagnosis is controversial amongst both patients and health professionals. There is widespread disagreement as to how it should be described, and the personality disorder label has long been criticised for being stigmatising (National Collaborating Centre for Mental Health, 2009). Some maintain that BPD should be addressed as a form of complex trauma presentation (Herman, 1992). The issue of reliable and valid assessment of BPD is further compounded by the ongoing debate as to whether the diagnosis actually represents a specific, identified disorder. The diagnosis is broadly applied to patients with a wide range of presenting issues, and there are numerous subsets within the diagnosis; evidenced by the number of combinations (256) of diagnostic criteria that may result in diagnosis (e.g. Johansen *et al.*, 2004). For example, self-harm is frequently a feature, but

not every person with BPD self-harms, and such a difference in presentation may indicate variation in underlying pathology. It is arguable therefore that homogeneity of participant groups may not necessarily be ensured by strict application of the diagnostic criteria.

One of the main limitations of conducting research in this area is the lack of self-report measures of metacognition and broader aspects of mentalization. The construct is complex, and as yet there has been a limited amount of research that has attempted to allow its operationalization. Time, cost and researcher's qualifications were also a factor in the choice of measure, for example the level of training required prevented the use of the AAI. Also, people may be less likely to participate if measures are extensive or intrusive. Given the low availability of participants and the nature of BPD, it was essential that this was taken into consideration in the choice of measures.

During this study, it was not possible to re-administer the RSQ and MSQ to gain a measure of their stability in these samples. However, both questionnaires have already demonstrated good to excellent test-retest reliability and this was not considered to be necessary. In hindsight, given that the RSQ subscales were decided on the basis of the factor structure of the questionnaire within this study, it would have been desirable to test their stability over time. The foundation of evidence for the continuity of attachment style strongly suggests that scores are unlikely to change, particularly in the short-term (Hamilton, 2000).

5.5 Implications for research

The evidence for the role of attachment in the development of personality disorder is becoming increasingly convincing; and specifically the risks of impaired attachment relationships in childhood (Zanarini, 2000). This study, and similar research, has shown that there are attachment problems continuing into adulthood for people with BPD. At present, there is a paucity of longitudinal research into attachment relationships in adults with BPD. Interpersonal problems in close relationships are a central feature of BPD (American Psychiatric Association, 2000) and it is conceivable that attachment style is a key maintenance factor in this presenting problem, and subsequently the disorder as a whole. One intriguing question for future research would be whether outcome in BPD is predicted by quality of attachment relationships. Whilst the continuity of attachment is well established as a construct, it is known that people have the capacity to change in their attachment style (Waters *et al.*, 2000). It would be useful to know if the presence of a relatively stable and secure relationship is a protective factor for people with BPD, and whether this can allow them to develop greater security in their attachment style.

A corollary question is of course whether or not there is a role for psychological treatment in improving attachment styles and quality of relationships. Could psychological

therapy foster changes in attachment style? For some therapists, it is the therapeutic relationship itself that is considered to be the active ingredient in treatment. It is also possible that many of the skills that are acquired from psychological treatment may serve to improve interpersonal interaction and therefore, in the long-term, to more secure attachment style. The mechanism could involve less negative behaviour in relationships (e.g. aggression and self-harm), more positive experiences of interactions within relationships and healthier choices of friends and partners. DBT, for example, encourages increased responsibility for behaviour and choices in interpersonal relationships; it would be interesting to know whether this in turn leads to improved adult attachment relationships.

5.6 Implications for practice

The concept of providing direct intervention to improve the quality of adult attachment relationships in order to treat personality disorder, or complex mental health problem, challenges the traditions of psychology. Yet, this area has been gaining ground in recent years, for example through treatment such as behavioural family therapy (National Institute for Clinical Excellence, 2009). As a profession, psychology is increasingly cognisant of the relevance of systemic factors to the maintenance of individual mental health problems, even in disorders that have often been understood as neurobiological illnesses, such as schizophrenia. There is mounting evidence of the importance of attachment history in the development of BPD and there are practitioners who advocate for attachment to be addressed with assessment, intervention and evaluation (e.g. Bateman & Fonagy, 2008). Outcome measures for psychological treatments tend to focus upon individual factors such as mood and problematic behaviour (e.g. Evans *et al.*, 2002). Symptoms such as self-harm, suicidal thoughts and activity level are commonly monitored; however, quality of interpersonal relationships is not. Borderline personality disorder is known to be associated with unstable attachment relationships during adulthood (American Psychiatric Association, 2000) and therefore a key measure for the effectiveness of any treatment for BPD should be the impact that it has upon the patient's ability to manage their interpersonal relationships. It would be expected that change in attachment relationships would take time, however, any adjustment in attachment style should have long-term implications for personality organisation. Using therapy to address attachment issues should necessitate long-term follow-up. Given the persistent nature of the disorder itself, it is reasonable to employ long-term evaluations in order to demonstrate the effectiveness of interventions.

Metacognition has evolved from cognitive and developmental psychology and has become a basis for understanding and treating psychological disorders, (Wells, 2007). There is evidence that accounting for the role of metacognitions is effective in psychological treatments such as depression, anxiety and obsessive-compulsive disorder (Wells & Carter, 2001). Further research is required, however there is tentative evidence from this study for

also addressing metacognition in BPD. Wells argues that metacognition controls and modifies cognition, and that resistance to treatment change in cognitive therapy results from failure to fully incorporate metacognition in the formulation, (Wells, 2007). Similarly, Colle *et al.* (2010) advise that, given the association between metacognition and personality disorder, clinicians should be wary of using interventions that rely on the patient to apply mentalizing skills in which they are lacking. They suggest that patients should be provided with interventions that are within the 'metacognitive zone of proximal development', in order to allow them to gradually come to an improved understanding of their mental processes (Colle *et al.*, 2010). With regard to attachment, it has been demonstrated that during therapeutic interventions, support and validation given to the patient with BPD results in temporary disorganisation of metacognitive processes (Prunetti *et al.*, 2008). The authors propose that such interactions activate the attachment system of the patient, and due to their existing disorganised internal working models, metacognitive processes are hampered (Prunetti *et al.*, 2008).

It is interesting to reflect on the impact of memory deficits in BPD, and its treatment, for example, poor memory can lead to practical issues (such as forgetting appointments) that may have a damaging effect on engagement. Also, skills based treatments require participants to learn strategies and remember to use them. Acknowledging that memory could be affected in BPD may help patients to gain an improved understanding of their difficulties.

5.7 Conclusion

To summarise, this study has demonstrated that adults with borderline personality disorder exhibit high levels of self-reported attachment-avoidance and attachment-anxiety in their current attachment relationships, relative to a non-BPD clinical comparison group. There is preliminary evidence that people with BPD have higher levels of maladaptive metacognition than people with symptoms of depression, and that this is associated with a measure of severity of symptoms. The present study has also demonstrated an association between self-reported adult attachment style and maladaptive metacognitive strategies and beliefs.

6. Journal Article

A comparison of self-reported adult attachment-anxiety and attachment-avoidance in Borderline Personality Disorder and Depression

Title: A comparison of self-reported adult attachment-anxiety and attachment-avoidance in Borderline Personality Disorder and Depression

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Short title: Attachment in Borderline Personality Disorder

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Background: Borderline personality disorder (BPD) is a psychiatric diagnosis characterized by emotional and behavioural instability, and impaired ability to maintain relationships. Several studies have demonstrated an association between BPD and insecure attachment relationships in adulthood. The aim of the present study was to compare self-reported attachment in a group of participants with BPD to that of a depressed clinical group.

Methods: Griffin and Bartholomew's Relationship Scales Questionnaire (RSQ) was administered to participants with BPD ($n = 19$) and a non-BPD comparison group ($n = 21$) comprised of patients referred for symptoms of depression.

Results: Self-reported attachment-anxiety and attachment-avoidance, as measured by the RSQ were found to be significantly higher in the BPD group than the depression group.

Conclusion: It was concluded that adults with BPD reported high levels of attachment-avoidance and attachment-anxiety in their current attachment relationships, relative to a non-BPD clinical comparison group.

Introduction

Borderline personality disorder (BPD) is a psychiatric diagnosis characterized by emotional and behavioural instability, and impaired ability to maintain stable relationships. The disorder often results in problems in personal, social and occupational functioning (NICE, 2009). Other features of BPD include: emotional volatility; unstable internal representations of self and others; a sense of others as idealised/devalued; fear of abandonment by idealised other; and an associated perception of rejection that results in anger and dysphoria (Dozier, Stovall-McClough, & Albus, 2008). Dozier *et al.* (2008) argue that the characteristic features of BPD themselves indicate the relevance of attachment theory to the development of the disorder. However, most studies examining self-reported attachment have not used representative samples of individuals diagnosed with BPD and have for the most part relied upon non-clinical/student populations (e.g. Nickell, Waudby, & Trull, 2002); or broad clinical groups such as male domestic abusers (e.g. Dutton, Saunders, Starzomski, & Bartholomew, 1994). Furthermore, there have been few studies that have compared participants with BPD to those with other psychiatric disorders on their self-reported attachment style (e.g. Patrick, Hobson, Castle, Howard, & *et al.*, 1994). Insecure forms of attachment, specifically preoccupied and unresolved styles, have been associated with BPD using both interview (Barone, 2003; Diamond, Stovall-McClough, Clarkin, & Levy, 2003; Fonagy *et al.*, 1996; Rosenstein & Horowitz, 1996; Stalker & Davies, 1995; Stovall-McClough & Cloitre, 2003) and self-report methods of assessment (Patrick *et al.*, 1994).

Attachment theory (Bowlby, 1969, 1973, 1980) describes the biologically based system within the child that drives the formation of affectional bonds to their caregiver and the associated behaviours designed to ensure the physical proximity and mental availability of the caregiver. 'Attachment style' refers to observed patterns of behaviour in the attachment relationship (Cassidy, 2008). A child's attachment to a particular person may be classified as secure, avoidant, ambivalent or disorganised (Ainsworth, Blehar, Waters, & Wall, 1978; Lyons-Ruth & Jacobvitz, 2008). Although attachment style is specific to a particular relationship, attachment style in childhood is predictive of attachment states of mind in close relationships in adulthood (Berlin, Cassidy, & Appleyard, 2008). George, Kaplan and Main (1984, 1985, 1996) devised a qualitative method of assessing adult attachment states of mind, the Adult Attachment Interview (AAI). They observed four categories of attachment states of mind, which correspond to the infant attachment styles: autonomous, dismissing, pre-occupied and unresolved (Hesse, 2008). Hazan and Shaver (1987) introduced the concept of adult attachment style and applied it to romantic and marital relationships (Mikulincer & Shaver, 2008). Numerous self-report scales have subsequently been developed in order to assess adult attachment, for a review see Ravitz (2010). There is ongoing debate regarding the categorical and continuous approaches to measurement of attachment (Griffin & Bartholomew, 1994a). Bartholomew (1990) provided a useful conceptualisation which highlights the similarities between self-reported adult attachment style, and the dimensions defining Ainsworth *et al.*'s (1978) infant

attachment categories (Mikulincer & Shaver, 2008). Insecure attachment may be characterised by high attachment-anxiety; high attachment avoidance; or a combination of both (Bartholomew, 1990). In attachment relationships the caregiver facilitates the child's understanding of their own and other's mental states and emotions. It has been proposed that BPD is a disorder of attachment, with insecure (disorganised) attachment being associated with inadequate capacity to represent mental states (Bateman & Fonagy, 2008).

Several studies have investigated self-reported attachment in BPD using a variety of assessment measures. Agrawal and colleagues (2004) reviewed thirteen studies of attachment in BPD of which seven used self-report measures: Attachment Styles Inventory (Sack, Sperling, Fagen, & Foelsch, 1996; Sperling, Sharp, & Fishler, 1991), Attachment Style Questionnaire (Fossati *et al.*, 2001), Attachment Self-report (Nickell *et al.*, 2002), Reciprocal Attachment Questionnaire (Sack *et al.*, 1996; West, Keller, Links, & Patrick, 1993), RQ (Brennan & Shaver, 1998; Dutton *et al.*, 1994), RSQ (Dutton *et al.*, 1994). Many of the studies did not recruit participants from clinical sources; participants were often assessed on continuous measures of borderline traits, rather than using diagnostic interviews; the different attachment measures targeted a range of relationships; and sample sizes were small (Agrawal *et al.*, 2004). However, the authors reported that all of the studies had demonstrated a strong association between BPD and attachment insecurity. They identified a consistent finding that the participants with BPD or BPD traits were either classified as having an unresolved attachment style on the AAI, or belonged to the equivalent fearful

category when assessed using self-report instruments, (Agrawal *et al.*, 2004). In addition, they noted that, on self-report measures that allowed for more than one style of attachment, secondary classification of these participants was pre-occupied. The pre-occupied attachment style is characterised by higher levels of attachment-anxiety on continuous measures.

A few studies have used the AAI (George *et al.*, 1984, 1985, 1996) to investigate attachment states of mind in adults with BPD. AAI transcripts may be coded to yield either three or four classifications: secure, pre-occupied, and dismissing attachment state of mind; and an unresolved or unclassifiable attachment (Dozier *et al.*, 2008). There is evidence that, where only three categories are employed, the pre-occupied category is assigned to the highest proportion of a group of participants with BPD (Fonagy *et al.*, 1996; Rosenstein & Horowitz, 1996; Stalker & Davies, 1995). However, where the unresolved classification is added, the majority of people with BPD are assigned to this category (Barone, 2003; Diamond *et al.*, 2003; Stovall-McClough & Cloitre, 2003). Agrawal *et al.* (2004) found that all of the five AAI studies they reviewed had demonstrated that people with BPD were predominantly classified as unresolved in their attachment style, with pre-occupied secondary classifications. More recently, a large scale review of more than 10,000 administrations of the AAI in over 200 studies across 25 years was conducted by Bakermans-Kranenburg and van Ijzendoorn (2009). They also concluded that there was an association between disorders with an internalizing dimension (in particular BPD) and higher rates of unresolved

and pre-occupied attachment style classifications, (Bakermans-Kranenburg & van IJzendoorn, 2009).

There are a limited number of studies that have compared adult attachment style in BPD and depression using self-report methods. The key study to date administered the Relationships Questionnaire (RQ)(Bartholemew and Horowitz, 1991) to patients with depression, patients with BPD, and a group of non-borderline patients, (Choi-Kain, Fitzmaurice, Zanarini, Laverdiere, & Gunderson, 2009). Prior to this there had been four studies of relevance (Alexander, 1993; Brennan & Shaver, 1998; Dutton *et al.*, 1994; Hoermann, Clarkin, Hull, & Fertuck, 2004). However, none had included a representative clinical sample and were criticised for inadequate diagnostic assessment (Choi-Kain *et al.*, 2009). By contrast, Choi-Kain *et al.* (2009) used representative clinical and comparison samples; and administered extensive diagnostic assessment including reliable and valid structured clinical interviews. Their study found that the BPD and depression groups were significantly less secure than the non-borderline group; the BPD group were significantly more fearful, and more pre-occupied than the depressed, and non-borderline groups; and there was no significant differences between groups on the dismissing category scores. One criticism of the study by Choi-Kain *et al.*, (2009), acknowledged by its authors, is the choice of attachment measure. The RQ has not been as well evaluated as many other self-report attachment measures and the secure scale has poor internal consistency (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). Choi-Kain *et al.* (2009) state that the RQ was selected for its practical

qualities, particularly the ease of administration to a large sample, given that participants were also subject to extensive diagnostic assessment.

The aim of the present study was to compare self-reported attachment in a group of participants with BPD to that of a depressed clinical group.

Griffin and Bartholomew's (1994b) Relationship Scales Questionnaire (RSQ) was used to measure self-reported attachment style. The RSQ may be used to provide a continuous measure of four attachment prototypes, corresponding to those of the RQ (Griffin & Bartholomew, 1994b).

Alternatively it may be used to obtain scores on either two or three attachment dimensions (Kurdek, 2002). It was hypothesised that: (a) the BPD group will demonstrate significantly higher attachment-anxiety on the Relationship Scales Questionnaire than the depression group; (b) the BPD group will demonstrate significantly higher attachment-avoidance on the Relationship Scales Questionnaire than the depression group.

Methods

Participants

Participants were recruited for assignment to one of two groups: a borderline personality disorder (BPD) group and a clinical comparison group. The inclusion criterion for the BPD group was an existing diagnosis of borderline personality disorder. Patients had previously been diagnosed by a consultant psychiatrist using DSM-III or ICD-10 criteria. The researcher verified the diagnosis by examining their psychiatric records. Those patients who were currently in crisis were not invited to participate in the study. The

inclusion criteria for the clinical comparison group were a referral to the Psychology Department for signs and/or symptoms of depression, or depression as a primary presenting issue. Exclusion criteria for both groups were a diagnosis of learning disability, comorbid diagnoses of alcohol or drug addiction, or current hospital admission.

Recruitment of participants was conducted within an NHS trust that is predominantly rural and spans a large geographical area. Patients who were eligible for participation in the BPD group were identified from the current caseloads within psychology, psychiatry and community mental health teams. Further potential participants for this group were identified from the Dialectical Behaviour Therapy (DBT) waiting list held by the Personality Disorders Service. Potential participants for the clinical control group were identified from the Psychology Department's database: from the waiting list and from the current caseloads of individual clinicians. In total, 40 participants were recruited to the study: 19 were assigned to the BPD group and 21 to the clinical comparison group. The BPD group comprised 2 males and 17 females, ranging in age from 30.1 to 56.0 years, mean age was 42.7 years. The clinical comparison group comprised 10 males and 11 females, ranging in age from 31.5 to 73.9 years, mean age was 48.8 years.

Measures

As part of a larger study (Walton, 2010) participants were asked to complete four short questionnaires: the Relationship Scales Questionnaire (RSQ)(Griffin & Bartholomew, 1994b); Metacognitions Questionnaire (30-

item version)(MCQ-30)(Wells & Cartwright-Hatton, 2004); the Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM)(Evans *et al.*, 2000); and the Hospital Anxiety and Depression Scale (HADS)(Snaith & Zigmond, 1994). Only findings relating to the RSQ are reported here.

The Relationship Scales Questionnaire (RSQ) was developed by Griffin and Bartholomew (1994b). It is a 30 item self-report questionnaire designed to assess an individual's style of attachment in adult relationships. The questionnaire comprises a list of statements regarding close relationships and the respondent is instructed to rate the extent to which the statement describes them on a scale of one to five (Bartholomew, 2005; Griffin & Bartholomew, 1994b). Although this study uses the original five-point scale (Griffin & Bartholomew, 1994b), there is a seven-point version, provided by an internet website (Center for HIV Identification Prevention and Treatment Services, 2010). The RSQ has demonstrated convergent, discriminant and predictive validity (Ravitz *et al.*, 2010). There are several methods of calculating scores on the questionnaire, see Kurdek (2002) for a review. Kurdek (2002) concluded that attachment-anxiety and attachment-avoidance were reliable factors in the RSQ. However, a further model since proposed by Backstrom and Holmes (2001) as a viable alternative to this two-factor model comprised three dimensions of security/insecurity, avoidance/dismissing and pre-occupied/anxious. A factor analysis, performed on the data from this study, found that a two-factor solution best fitted the data, explaining 41.3 percent of the variance. The method used was principal axis factoring with varimax rotation. Examination of items loading

on to each factor suggested an attachment-anxiety and attachment-avoidance dimension. Subscale scores were the total of responses to items: attachment-anxiety comprised items 4, 7, 8, 9, 11, 12, 14, 16, 17, 18, 21, 22, 23, 25 and 28; and attachment-avoidance comprised items 1, 2, 3(reversed), 5, 6, 10(reversed), 13, 15(reversed), 19, 20, 24, 26, 27(reversed), 29 and 30(reversed). This structure demonstrated good to excellent internal consistency: attachment-anxiety scale had an alpha of 0.81 in the BPD group and 0.89 in the depression group; the attachment-avoidance scale had an alpha of 0.78 in the BPD group and 0.83 in the depression group.

Procedure

The researcher contacted those patients who had agreed to participate in the study and gave them the option to either meet with the researcher to complete the questionnaires at an appropriate NHS premises (hospital or general practitioners surgery); or to receive the questionnaires by post to complete and return in a stamped addressed envelope provided. Those who attended in person were given the choice to read and complete the questionnaire by themselves, or to have the researcher read out the statements and record their answers. Of the 19 participants in the BPD group, 10 opted to complete the questionnaire by post, 47.6 percent. All of the participants in the clinical comparison group opted to complete the questionnaire by post. Following the study, participants were sent a summary of the findings of the research.

Patients were first approached to participate in the study by a healthcare professional or allied healthcare professional currently providing assessment or intervention (i.e. their psychiatrist, psychologist, CBT therapist or community psychiatric nurse). They were either approached in person at a routine appointment, or contacted by post in a letter from their case holder. All of those invited to participate were provided with an 'Information about the Research' sheet, either by the clinician, or enclosed with the invitation letter. They were instructed to contact the researcher (by post, phone or email) if they were interested in participating in the study. The researcher answered any questions the patient had before including them in the study. Informed, written consent was obtained from all participants.

Statistical Analyses

The participants' responses to the questionnaires were entered into a database by the researcher and analysed using the Statistical Package for the Social Sciences (SPSS) 11.0 computer software. A small amount (0.4 percent) of missing data was replaced using the series mean. Given that there was a significant difference in the proportion of male and female participants between the two samples, it was necessary to account for the effects of gender in the comparison of self-reported attachment in the two samples. Analysis of variance was used to compare the groups attachment-anxiety and attachment-avoidance scores separately.

Ethical Considerations

The study was granted ethical approval by: the Department of Clinical Psychology Ethics committee and the South of Scotland Research Ethics Committee. Management approval was given by the local NHS Research and Development Department. All participants were required to sign a consent form to indicate that they had given their informed consent. All data generated by the study remained confidential and, with the exception of disclosure of risk to self or others, was not shared with the involved healthcare professionals. Responses to the questionnaires were assigned an anonymous identification code and stored separately from participant's personal information.

Participants were advised that a disclosure of risk of harm to self or another would be communicated to their case holder (or other appropriate professionals). In the case of such a disclosure, a risk assessment was carried out by the researcher. All of the patients invited to participate in the study were informed that their participation, or their decision not to participate, would in no way influence the treatment provided to them by the services involved in the study.

Results

Table 1 presents a summary of demographic information provided by participants. All differences were analysed using either independent samples t-tests (two-tailed) or Chi-squared tests. There was a significant difference in the proportion of male and female participants in each sample, ($\chi^2_1 = 6.54$, p

< 0.011). The difference between the two samples in the age of participants was not significant, ($t_{38} = 1.85, p < 0.071$).

[PLACE TABLE 1 ABOUT HERE]

The distributions of attachment-anxiety and attachment-avoidance subscale scores were examined using box-plots and histograms. The mean RSQ subscale scores and standard deviations were calculated for the two groups and are presented in Table 2. The scores were normally distributed, without significant skew or kurtosis. Two outliers in the BPD group were identified and removed from the analysis.

[PLACE TABLE 2 ABOUT HERE]

Given that there was a significant difference in the proportion of male and female participants between the two samples, it was necessary to account for the effects of gender in the comparison of self-reported attachment in the two samples. Two-way factorial analyses of variance, using 'group' and 'gender' as between-participant factors, were performed separately for each of the RSQ subscales.

For the attachment-anxiety subscale, there was a main effect of group: participants in the BPD group reported significantly higher levels of attachment-anxiety than participants in the depression comparison group ($F_{1,3} = 8.41, p < 0.006$). The main effect of gender was not significant ($F_{1,3} = 0.003, p < 0.96$), and there was no significant interaction between group and gender ($F_{1,3} = 0.003, p < 0.96$). Cohen's d was used to estimate the size of the difference in attachment-anxiety between the BPD and depression

groups. The difference was large, $d = 1.31$. For a two-tailed hypothesis, with an alpha level of 0.05, observed power was 0.98.

For the attachment-avoidance subscale, there was a main effect of group: participants in the BPD group reported significantly higher levels of attachment-avoidance than participants in the depression comparison group ($F_{1,3} = 4.73, p < 0.037$). The main effect of gender was not significant ($F_{1,3} = 0.37, p < 0.55$), and there was no significant interaction between group and gender ($F_{1,3} = 0.24, p < 0.63$). Cohen's d was used to estimate the size of the difference in attachment-anxiety between the BPD and depression groups. The difference was large, $d = 0.98$. For a two-tailed hypothesis, with an alpha level of 0.05, observed power was 0.83.

In order to investigate the contribution of current mood state, depression and anxiety scores from the HADS were included in the analysis of variance for each RSQ subscale. Separate HADS anxiety and depression subscales were dichotomised to obtain two levels of independent variables: normal to mild (scores of 0-10) and moderate to severe (scores of 11 to 21). In the analysis of variance for attachment-anxiety, there was no main effect of HADS depression ($F_{1,7} = 1.28, p < 0.266$). There was a main effect of HADS anxiety ($F_{1,7} = 5.98, p < 0.022$). However the difference between the two groups on the attachment-anxiety subscale remained significant ($F_{1,7} = 6.36, p < 0.018$). There were also significant interactions between group and HADS anxiety ($F_{1,7} = 4.28, p < 0.49$) and between group and HADS depression ($F_{1,7} = 5.43, p < 0.028$). None of the other interactions were statistically significant.

In the analysis of variance for attachment-avoidance, there was no main effect of HADS depression ($F_{1,7} = 3.01, p < 0.095$) or HADS anxiety ($F_{1,7} = 2.02, p < 0.167$). The difference between the two groups on the attachment-anxiety subscale remained significant ($F_{1,7} = 5.87, p < 0.023$). None of the interactions were statistically significant.

According to Bartholomew's (1990) conceptualisation of attachment dimensions, low attachment-anxiety and low attachment-avoidance are characteristic of secure attachment style. High scores on both dimensions are consistent with fearful/unresolved insecure styles of attachment. Low attachment-anxiety with high attachment-avoidance corresponds to dismissing attachment style, and low attachment-avoidance with high attachment-anxiety corresponds to preoccupied attachment style. Although a lack of normative data for the RSQ precludes the possibility of contextualising the present data within these attachment style categories, it is useful to explore how the scores of the groups occupy this two-dimensional space, relative to one another. Therefore, participants' attachment-avoidance scores were plotted against their attachment-anxiety scores in a scatter diagram (figure 1). Participants with BPD tend to fall in to the upper right quadrant of the graph, reflecting high attachment-avoidance and high attachment-anxiety. Many of the depressed participants also fall in the upper right quadrant; however, this group is also distributed in the lower left quadrant of the graph: low attachment-avoidance, low attachment anxiety. Therefore the depressed participants demonstrate a range along the

continuum of security; and the participants with BPD tend to cluster towards the insecure end of this continuum.

[PLACE FIGURE 1 ABOUT HERE]

Discussion

Attachment-anxiety and attachment-avoidance, as measured by the RSQ, were found to be significantly higher in the BPD group than the depression group. The primary experimental hypotheses are therefore retained. The results of the present study corroborates Choi-Kain *et al.*'s (2009) findings, as the fearful category corresponds to both high attachment-anxiety and high attachment-avoidance on the RSQ, and the pre-occupied category corresponds to high attachment anxiety. To some extent, the smaller effect size found between the depression group and the BPD group on attachment-avoidance is consistent with Choi-Kain *et al.*'s (2009) findings regarding the dismissing category, as this category is equivalent to high attachment-avoidance (Bartholomew, 1990). The predominance of avoidant-attachment traits in depressed respondents (Patrick *et al.*, 1994), due to systematic bias in exclusion criteria, (Dozier *et al.*, 2008), would account for the smaller difference in scores between the two groups on attachment-avoidance scores than the difference between them on the attachment-anxiety dimension. Therefore, rather than there being lower attachment-avoidance than attachment-anxiety in BPD, the size of the difference is reduced by the depressed participants' tendency to report higher attachment-avoidance.

It is thought that attachment security during childhood is a prerequisite for the individual to develop the capacity to understand own and other's mental states (Fonagy, Gergely, Jurist, & Target, 2004). BPD is argued to be a disorder of attachment with associated deficits in capacity to represent mental states (Bateman & Fonagy, 2008). Fonagy and colleagues argue that insecure, disorganised relationships are characterised by confusing, frightening and harmful mental states in the caregiver, and therefore cause the child to inhibit reflection (Dozier *et al.*, 2008). The experience of trauma in the absence of support from a caregiver prevents the child from integrating aspects of the caregiver into single models of self and other (Main & Hesse, 1990) and therefore impinge on development of capacity to represent mental states. Hesse and Main (2006) observe that individuals with disorganised attachment experience a collapse of attentional and behavioural strategies as a result of stress. Fonagy and Bateman (2008) proposed that, in BPD, the capacity to represent mental states becomes unstable during emotional arousal as a result of hyper-responsiveness of the attachment system. The symptoms of BPD are accounted for by the activation of modes of psychological functioning that developed in the context of disruption of early attachment relationships (Fonagy & Bateman, 2008). Their model views attachment processes, traumatic experiences in the context of attachment, and their interaction with neurobiological development in the context of innate vulnerabilities, as key aetiological factors in the development of BPD (Fonagy & Bateman, 2008).

The main limitation of this study is that participant selection was based upon clinical judgement by the patients' psychiatrist, rather than a structured diagnostic assessment applied consistently to all participants. However, this is an issue that is frequently observed in research within this field, due to the practical constraints of applying formal assessments (e.g. Patrick *et al.*, 1994). Many studies do not include structured clinical interviews to assess participants for personality disorder, some use case note review, or a brief screen (e.g. Fossati *et al.*, 2001). The review of psychiatric notes of the participants with BPD confirmed that they all had been diagnosed with the disorder. Furthermore, the histories of these participants were consistent with borderline personality presentation, detailing severe difficulties in the patients' interpersonal relationships throughout life, and frequently self-harm and suicidality. No features of BPD were identified in the notes of the participants assigned to the depressed group.

Several sources of bias were identified in the recruitment process and these were mainly attributable to the opportunistic sampling method. Firstly, exclusion criteria and referrers' tendency to recruit only those who were 'well-enough', may have created a bias towards the recruitment of people with less severe presentations of BPD than are generally seen in the wider population. Secondly, the act of volunteering for participation may have introduced bias: self-selection may be associated with qualities that are present within particular subgroups of people with BPD. Thirdly, the control group was recruited via the Psychology Department, which is a tertiary service and therefore severe presentations were more likely to be over-represented.

Overall, it would appear that the participants recruited to the BPD sample may have reflected less severe (current) presentations of BPD. There is also a possibility that more severe aspects of depression were represented within the clinical control group. It is not thought that these biases are likely to have inflated the results obtained in this study as it is reasonable to predict that, had the sample been more representative of BPD, the difference would have been greater. The sample size for the study was small, however the findings relating to the main hypotheses had a large effect size and achieved sufficient power for comparative analysis. Furthermore, these results are supported by similar findings in previous research (e.g. Choi-Kain *et al.*, 2009) and are consistent with current theoretical understanding of attachment in BPD (Dozier *et al.*, 2008).

In conclusion, this study has demonstrated that adults with borderline personality disorder exhibit high levels of self-reported attachment-avoidance and attachment-anxiety in their current attachment relationships, relative to a non-BPD clinical comparison group. The findings of the present study are consistent with the existing literature regarding the profile of attachment in BPD (Agrawal *et al.*, 2004). One intriguing question for future research would be whether outcome in BPD is predicted by quality of attachment relationships. Whilst the continuity of attachment is well established as a construct, it is known that people have the capacity to change in their attachment style, subject to their experiences of relationships (Hamilton, 2000), possibly due to: situational factors, personality variables and changes in relational schema (Davila, Karney, & Bradbury, 1999). It would be useful

to know if the presence of a relatively stable and secure relationship is a protective factor for people with BPD, and whether this can allow them to develop greater security in their attachment style. A corollary question is whether or not there is a role for psychological treatment in improving attachment styles and quality of relationships in BPD. It is arguable that many of the skills that are acquired from psychological treatment may serve to improve interpersonal interaction and therefore, in the long-term, more secure attachment style.

To the author's awareness, there have been no published studies comparing RSQ scores in depression and BPD. Therefore the findings of the present study contribute to the limited research comparing self-reported attachment in depression and BPD.

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Table 1. Demographic information for BPD and depression groups

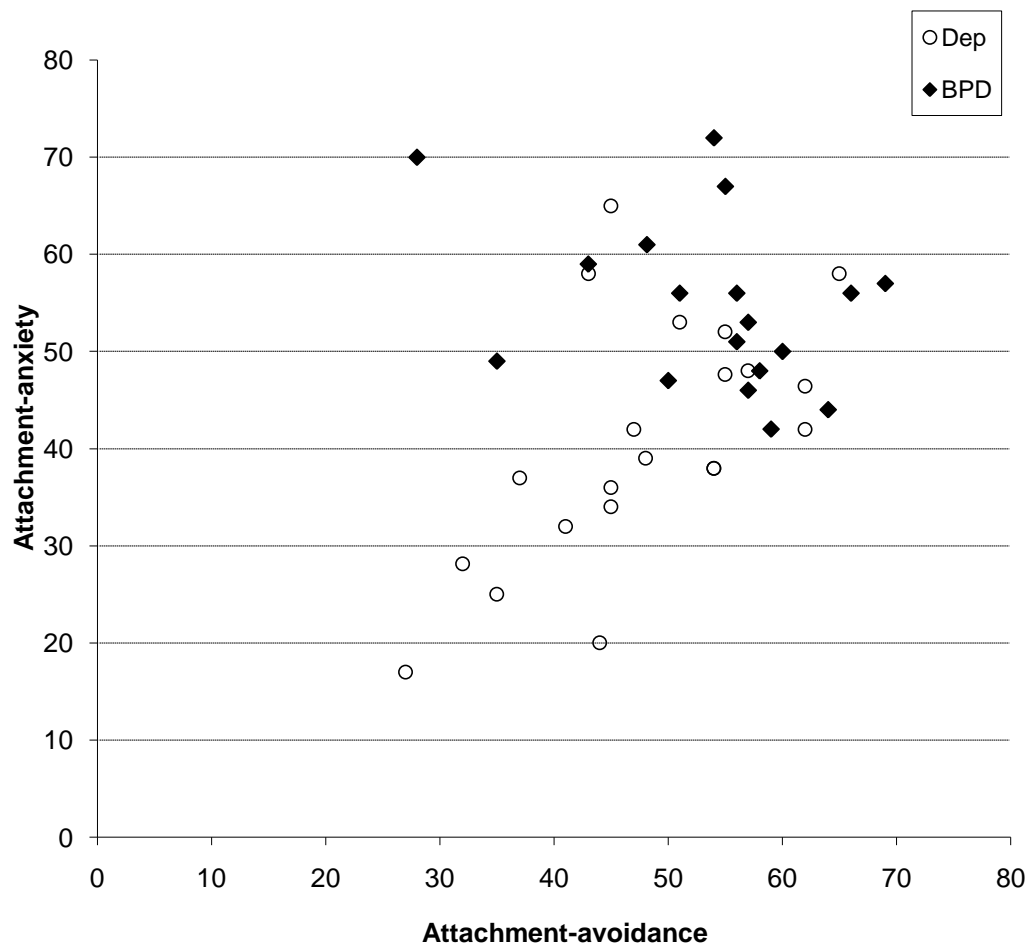
		Group	
		BPD	Depression
Number of participants		19	21
Number of males (percent)		2 (10.5) *	10 (47.6)
Number of females (percent)		17 (89.5) *	11 (52.4)
Mean Age (SD)		42.7 (9.1)	48.8 (11.2)
Age range		30.1 to 56.0	31.5 to 73.9
Marital Status	<i>Single</i>	3	5
	<i>Cohabiting</i>	4	2
	<i>Married</i>	5	11
	<i>Divorced/Separated</i>	7 *	2
	<i>Widowed</i>	0	1
Employment Status	<i>Unemployed: never employed</i>	0	0
	<i>Unemployed: more than a year</i>	16 **	3
	<i>Unemployed: less than a year</i>	0	3
	<i>Employed: part-time</i>	1	3
	<i>Employed: full-time</i>	2	5
	<i>Employed: self-employed</i>	0	3
	<i>Retired</i>	0 *	4
	<i>Full-time education</i>	0	0
Highest level of educational qualification	<i>No qualifications</i>	7 *	1
	<i>Standards/GCSE/O-level</i>	4	4
	<i>Highers/AS-level/A-level</i>	1	4
	<i>Vocational qualifications</i>	5	6
	<i>Undergraduate degree</i>	2	4
	<i>Masters degree</i>	0	2
	<i>Doctorate</i>	0	0

* $p < 0.05$; ** $p < 0.01$

Table 2. Relationship Scales Questionnaire mean (standard deviation) subscale scores and standard deviations in BPD and depression groups

	Group			
	BPD		Depression	
	Mean	(SD)	Mean	(SD)
Attachment-anxiety	55.0	(8.8)	47.8	(10.1)
Attachment-avoidance	56.1	(6.5)	40.8	(12.6)

Figure 1. Scatter diagram of attachment-anxiety scores plotted against attachment-avoidance scores for participants with BPD or symptoms of depression



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Appendix A - Research Ethics

A.1 NHS Highland Letter of Sponsorship

Frances Hines
Research and Development Manager
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Centre for Health Science
Old Perth Road
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20 January 2009

NHS Highland R&D ID: **641**

Ms Laura Walton
Trainee Clinical Psychologist
NHS Highland/University of Edinburgh
Drumossie Unit
New Craigs Hospital
Leachkin Road
Inverness
IV3 8NP

Dear Ms Walton,

Project title: **Attachment, Metacognition and Borderline Personality Disorder**
REC Number: **10/S1103/1**
NHS Highland Project Number: **641**

NHS Highland agrees to be Sponsor for this project under the requirements of the Scottish Executive Health Department Research Governance Framework for Health and Community Care (Second Edition (2006)).

It is the sponsor's responsibility to be satisfied that;

- The research proposal respects the dignity, rights, safety and well-being of participants and the relationship with care professionals;
- An appropriate process of independent expert review has demonstrated that the research proposal is worthwhile, of high scientific quality and good value for money;
- An appropriate ethics committee has given a favourable opinion;
- The chief investigator and other key researchers have the necessary expertise and experience and have access to the resources needed to conduct the proposed research successfully;
- The arrangements and resources proposed will allow the collection of high quality, accurate data and the systems and resources proposed are those required to allow appropriate data analysis and data protection;

Working with you to make Highland the healthy place to be



Headquarters:
NHS Highland, Assynt House, Beechwood Park, Inverness

Chairman: Mr Garry Coutts
Chief Executive: Dr Roger Gibbins, BA, MBA, PhD

A.1 NHS Highland Letter of Sponsorship – continued

- There is written agreement about the arrangements for the management and monitoring of the study;
- Arrangements are in place for the sponsor and other stakeholder organisations to be alerted if significant developments occur as the study progresses, whether in relation to the safety of individuals or to scientific direction;
- Agreement has been reached about compensation in the event of harm to research participants and if any organisation, or the sponsor itself, offers compensation without proof of negligence, it has made the necessary financial arrangements;
- There are arrangements for the conclusion of the study including appropriate plans for disseminating the findings;
- Scientific judgements made by the sponsor in relation to these responsibilities should be based on independent and expert advice;
- The sponsor is expected to assist any enquiry, audit or investigation related to the work.

I would be grateful if you could respond in writing to the SIX items highlighted in the attached Sponsor checklist. The checklist will be used to monitor the project, fulfilling the obligations NHS Highland has as Sponsor.

Yours sincerely,

Frances Hines
NHS Highland Research and Development Manager

A.1 NHS Highland Letter of Sponsorship - continued

Responsibilities of the Sponsor	Status	Action	
The research proposal respects the dignity, rights, safety and well-being of participants and the relationship with care professionals	This will be confirmed by the REC approval letter	Please send NHS Highland R&D Office a copy of the REC approval letter	R&D approval
An appropriate process of independent expert review has demonstrated that the research proposal is worthwhile, of high scientific quality and good value for money	This will be confirmed by the REC approval letter. Peer review has been completed by the academic supervisor	Please send NHS Highland R&D Office a copy of the REC approval letter	R&D approval
The chief investigator and other key researchers have the necessary expertise and experience and have access to the resources needed to conduct the proposed research successfully	Laura Walton is a trainee clinical psychologist and as such has completed relevant research training and had some experience of research activities.	NA	
The arrangements and resources proposed will allow the collection of high quality, accurate data and the systems and resources proposed are those required to allow appropriate data analysis and data protection	This will be confirmed by the REC approval letter	Please send NHS Highland R&D Office a copy of the REC approval letter	R&D approval
There is written agreement about the arrangements for the management and monitoring of the study	NHS Highland will monitor the study under the Research Governance Framework for Health and Social Care (2006). It will also be monitored by the University of Edinburgh.	NA	
Arrangements are in place for the sponsor and other stakeholder organisations to be alerted if significant developments occur as the study progresses, whether in relation to the safety of individuals or to scientific direction	If any changes to research take place, all amendments must be submitted to the REC, and copies sent to NHS Highland R&D Office for review. Any SAEs that occur must be copied to NHS Highland R&D Office.	Please forward any relevant documentation for review.	any relevant
Agreement has been reached about compensation in the event of harm to research participants and if any organisation, or the sponsor itself, offers compensation without proof of negligence, it has made the necessary financial arrangements	The study will be covered under NHS indemnity and insurance.	NA	
There are arrangements for the conclusion of the study including appropriate plans for disseminating the findings	This will be confirmed by the REC approval letter	Please send NHS Highland R&D Office a copy of the REC approval letter	R&D approval
Scientific judgements made by the sponsor in relation to these responsibilities should be based on independent and expert advice	This will be confirmed by the REC approval letter	Please send NHS Highland R&D Office a copy of the REC approval letter	R&D approval
The sponsor is expected to assist any enquiry, audit or investigation related to the work	NHS Highland R&D office may include the study in its annual audit of active studies. You will be notified.	NA	

A.2 University Letter of Sponsorship



COLLEGE of HUMANITIES and SOCIAL SCIENCE

The University of Edinburgh
Postgraduate Office
David Hume Tower
George Square
Edinburgh EH8 9JX
Telephone 0131 650 1000
or direct dial 0131 650 4086
Fax 0131 650 6536
Email hsspg@ed.ac.uk

To whom it may concern

MISS LAURA CAROL WALTON

This letter will confirm that Miss Walton is a 3rd year student at the University of Edinburgh, studying for the degree of DClínPsychol in the School of Health (Clinical Psychology). As such, she is formally recognized as a student under the auspices of the University's regulations and is formally supervised within the School of Health in Social Science

Mrs Anne Fernon
On behalf of the College of Humanities and Social Science

12 January 2010



The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336

A.3 University of Edinburgh Department of Clinical Psychology Research Ethics Committee Confirmation of Ethical Approval

UNIVERSITY OF EDINBURGH / NHS (SCOTLAND) CLINICAL PSYCHOLOGY TRAINING COURSE

Research Ethics Meeting 11th January 10

Present

Ethel Quayle

Emily Newan

Suzanne O'Rourke

Jill Cossar

Paul Morris

Karen McKenzie

Apologies

Lindesy Murray

Laura Walton

This was thought to be an interesting and worthwhile proposal. The panel suggested that the following issues should be discussed with her thesis supervisor. There is no requirement to resubmit to the REC.

Ethical concerns

- The Information Sheet needs to be edited to make it more reader-friendly and proof read to remove typos and grammatical errors.
- There needs to be greater consistency between the Information Sheet and the Consent form with regard to information about withdrawing from the study.
- The question of possible disclosure needs to be made explicit in the Information Sheet along with the fact that data is required to be kept for 5 years.

Research

- Some concern was expressed that the MCQ and CORE are likely to be highly correlated in terms of anxiety symptoms.
- Is the proposed sample size correct given that there are 3 predictors? It would be useful to specify what the predictors are and how the numbers were arrived at.
- There was a lot of concern about the viability of securing sufficient numbers for this study given that the current client numbers are only 10. It would be useful to have a letter of support from Inverness Community Mental Health Team with regard to the possible further 200 subjects.
- The threat of low numbers may be solved by the inclusion of another diagnostic group. This might be worth considering.

A.4 NHS Research Ethics Committee Confirmation of Ethical Approval

Lothian NHS Board

Deaconess House
148 Pleasance
Edinburgh
EH8 9RS
Telephone 0131 536 9000
Fax 0131 536 9009
www.nhsllothian.scot.nhs.uk



South East Scotland Research Ethics Committee 03

Deaconess House
148 Pleasance
Edinburgh
EH8 9RS

Telephone: 0131 536 9022
Facsimile: 0131 536 9346

09 March 2010

Miss Laura Walton, Trainee Clinical Psychologist
NHS Highland
Drumossie Unit,
New Craigs Hospital
Leachkin Road
INVERNESS,
IV3 8NP

Dear Miss Walton

Study Title: Do attachment and metacognition influence severity of clinical symptoms in Borderline Personality Disorder?
REC reference number: 10/S1103/1
Protocol number: 2

Thank you for your letter of 27 February 2010, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information was considered by the chair on behalf of SESREC 3.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.



09 MAR 2010

A.4 NHS Research Ethics Committee Confirmation of Ethical Approval - continued

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>. *Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.*

Sponsors are not required to notify the Committee of approvals from host organisations.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
REC application		22 January 2010
Investigator CV		20 January 2010
Questionnaire: RSQ		04 January 2010
Questionnaire: MCQ		04 January 2010
Questionnaire: CORE		
Questionnaire	HADS	
Investigator CV	Walton	
Participant Consent Form	2	19 January 2010
Letter from Sponsor		20 January 2009
Protocol	2	19 January 2010
Response to Request for Further Information		27 February 2010
Letter of invitation to participant	1 from Psychology Dept	20 February 2010
GP/Consultant Information Sheets	1	20 February 2010
Participant Information Sheet: PIS	3	20 February 2010
Participant Information Sheet: PIS Controls	3 Controls	20 February 2010
Letter of invitation to participant	1 DBT Service	20 February 2010
Participant Consent Form	3	20 February 2010

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

A.4 NHS Research Ethics Committee Confirmation of Ethical Approval - continued

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

10/S1103/1

Please quote this number on all correspondence

Yours sincerely

Dr Christine West
Chair

Email:

Enclosures: "After ethical review – guidance for researchers" [SL-AR1 for CTIMPs, SL- AR2 for other studies]

Copy to: Ms Frances Hines
[R&D office for NHS care organisation at lead site]

A.5 NHS Highland Research and Development Department Approval

Prof David J Godden, MD, FRCP(Edin), FRCP(Glasg)
Research Director
NHS Highland Research Office
Room S101
The Centre for Health Science
Old Perth Road
Inverness, IV2 3JH
Tel: 01463 255823
Fax: Not available
E-mail:



12 March 2010

NHS Highland R&D ID: 641

Miss Laura Walton
Trainee Clinical Psychologist
Drumossie Unit
New Craigs Hospital
Inverness
Leachkin Road
Inverness
IV3 8NP

Dear Miss Walton,

Management Approval for Non-Commercial Research

I am pleased to tell you that you now have Management Approval for the research project entitled: **'Self Reported Relationship Style and Ability to Think About Thoughts: A Comparison of Borderline Personality Disorder and Depression'**. I acknowledge that:

- The project is sponsored by NHS Highland.
- The project does not require external funding.
- Research Ethics approval for the project has been obtained from the South East Scotland 3 Research Ethics Committee, (Reference Number: 10/S1103/1).
- The project is Site-Specific Assessment exempt.

The following conditions apply:

- The responsibility for monitoring and auditing this project lies with NHS Highland.
- This study will be subject to ongoing monitoring for Research Governance purposes and may be audited to ensure compliance with the Research Governance Framework for Health and Community Care in Scotland (2006, 2nd Edition), however prior written notice of audit will be given.
- All amendments (minor or substantial) to the protocol or to the REC application should be copied to the NHS Highland Research and Development Office together with a copy of the

Working with you to make Highland the healthy place to be

Headquarters:
NHS Highland, Assynt House, Beechwood Park, Inverness, IV2 3HG

Chairman: Mr Garry Coutts
Chief Executive: Dr Roger Gibbins BA MBA PhD
Highland NHS Board is the common name of Highland Health Board



16 MAR 2010

A.5 NHS Highland Research and Development Department Approval - continued

corresponding approval letter. All such amendments will be covered by the approval given by this letter, and it is therefore not necessary to seek amendment approval.

- The paperwork concerning all incidents, adverse events and serious adverse events, thought to be attributable to participant's involvement in this project should be copied to the NHS Highland R&D Office.

Please report the information detailed above, or any other changes in resources used, or staff involved in the project, to the NHS Highland Research and Development Manager, Frances Hines (01463 255822, frances.hines@nhs.net).

Yours sincerely,

Prof David J Godden
NHS Highland Research Director

cc Frances Hines, R&D Manager, NHS Highland Research & Development Office, Room S101, The Centre for Health Science, Old Perth Road, Inverness, IV2 3JH

Appendix B - Study Materials

B.11 Information about the Research for participants with BPD

Information about the research



Version: 4

Department of Psychological Services
New Craigs
6-16 Leachkin Road
Inverness IV3 8NP
Telephone 01463 704683
Fax 01463 704686
www.show.scot.nhs.uk/nhshighland

Date: 28 April 2010



Information about the research

I would like to invite you to take part in my research study. Before you decide I would like you to understand why the research is being done and what it would involve for you. Talk to others about the study if you wish. Ask me if there is anything that is not clear. The information below describes the research in detail, in brief, participation would involve filling in **four short questionnaires**. I can either meet with you to complete the questionnaires, or I can post you the questionnaires for you to complete at your convenience and return by post. Your participation would be very much appreciated.

If you decide you would like to participate in the research, please contact me. You can either complete and return the contact details slip, email me at or telephone me on (01463) 704683.

Study title:

Self-reported relationship style and ability to think about thoughts:
A comparison of borderline personality disorder and depression

What is the purpose of the study?

This study is being carried out as part of an educational project for submission as part of the University of Edinburgh Doctorate in Clinical Psychology programme.

I am interested in how individual differences in relationship styles and ways of thinking are related in people who have a diagnosis of borderline personality disorder.

Why was I invited to participate?

You were invited to participate because you have a diagnosis of borderline personality disorder. I have asked a range of healthcare professionals to pass on information about this study and tell people how they can participate. They are giving this information to people that they work with who have a diagnosis of borderline personality disorder.

Do I have to take part?

It is up to you to decide to join the study. I will describe the study and go through this information sheet. If you agree to take part, I will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. This would not affect the standard of care you receive.

What will happen to me if I take part?

You will be asked to fill-in four questionnaires, and this is likely to take 30 minutes to an hour. You may choose to fill in the questionnaires and return them to me by post. Or, if you prefer, I may be able to arrange to meet with you to fill in the questionnaires with you at a convenient time and location, for example at the hospital, or a health centre.

I may need to confirm your diagnosis with the psychiatry service, by contacting your psychiatrist and looking at your psychiatric notes. The information you provide will remain confidential, and will not be passed on to your psychiatrist or any other healthcare professional. Your participation in the study and your questionnaire responses will not be recorded in your medical notes.

B.11 Information about the research for participants with BPD - continued

Information about the research

Version: 4

Date: 28 April 2010

What will I have to do?

You will be asked to complete four short questionnaires. You may complete the questionnaires yourself, or I can read out the questions to you if you prefer.

One questionnaire is about your relationships with other people; you will be asked to read 30 statements and rate whether you agree with them on a scale of 1 to 5. One questionnaire is about the way that you think; you will be asked to read thirty statements and rate whether they apply to you on a scale of 1 to 4. You will also be given a 34-item questionnaire about your current social functioning and psychological wellbeing, and a 14-item questionnaire about your mood.

I will also ask for some basic information (demographic information), such as your age and gender. I will record this on a separate sheet.

What are the disadvantages and risks of taking part?

The study will take approximately an hour of your time. If you choose to meet with me to complete the questionnaires, taking part would mean taking time to travel to the research venue, and the cost of travel. It is possible that some of the questionnaire items could upset you. Should this happen, you are free to discontinue, and may leave at any time.

What are the possible benefits of taking part?

I cannot promise the study will help you but the information we get from this study may help improve understanding of borderline personality disorder and the effect that it has on people. Many people experience participation in research as a positive experience.

Will my taking part in the study be kept confidential?

Yes. I will follow ethical and legal practice and all information about you will be handled in confidence. A letter will be sent to your GP to let them know that you are taking part in the study.

All information which is collected about you during the course of the research will be kept strictly confidential. The questionnaires and demographic information sheet will not contain any personal information (such as your name or address), and will be stored separately from your consent form. A participant number will be assigned to your consent form, demographic information sheet and your completed questionnaires. Only the researcher will have access to identifiable data.

The consent forms, questionnaires and demographic information will be stored securely on NHS premises by the researcher. The anonymised information will be entered into a statistical computer programme. All data will be destroyed following the completion of the academic project. The data will not be used for future studies.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed.

If you have a concern about any aspect of this study, you should ask to speak to the researcher who will do their best to answer your questions (telephone number: 01463 704683). If you remain unhappy and wish to complain formally, you can do this via the NHS Complaints Procedure. Details can be obtained from

The Complaints Team, NHS Highland, PO BOX 5713, Inverness, IV1 9AQ
Phone: 01463 705997
Fax: 01463 713 844
Email: nhshighland.complaints@nhs.net

B.11 Information about the research for participants with BPD - continued

Information about the research

Version: 4

Date: 28 April 2010

What happens if I don't want to carry on with the study?

You may withdraw at any time before you have completed all of the questionnaires and left the research venue. After this point your data will be anonymised and compiled with other people's data. Your decision to leave the study will be respected, and the researcher will not attempt to contact you again.

What will happen to the results of the research study?

The results will be written-up as part of a doctoral thesis, for submission to the University of Edinburgh Doctorate in Clinical Psychology programme. They may also be written-up for publication in a peer reviewed journal. You will not be identified in any report or publication.

Who is sponsoring the research?

The research is being sponsored by the University of Edinburgh, Clinical Psychology Department, School of Health in Social Science.

Who has reviewed the study?

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by South of Scotland Research Ethics Committee. The study has also been reviewed and given favourable opinion by the Department of Clinical Psychology Ethics committee and the School of Health in Social Science Ethics committee at the University of Edinburgh.

My contact details:

If you would like to participate in the research, or would like more information, please contact me:

Laura Walton
Drumossie Unit, New Craigs Hospital, Leachkin Road, Inverness, IV3 8NP
Telephone: (01463) 704683
Email:

You will be given a copy of this information sheet and a signed consent form to keep.

Contact Details

If you are interested in participating in this research, please fill in your contact details below and return to the researcher.

Title:..... First Name:..... Surname:

Address:.....
.....
.....

Telephone number (if applicable):.....

E-mail address (If applicable):.....

I consent to my contact details being given to the researcher so that they can contact me to discuss the research and answer any questions I have about participation. This does not mean that I have agreed to participate.

Signature: Date:

B.12 Information about the research for participants with symptoms of depression

Information about the research



Version: 4 (control)

Department of Psychological Services

New Craigs

6-16 Leachkin Road

Inverness IV3 8NP

Telephone 01463 704683

Fax 01463 704686

www.show.scot.nhs.uk/nhshighland

Date: 10 May 2010



Information about the research

I would like to invite you to take part in my research study. Before you decide I would like you to understand why the research is being done and what it would involve for you. Talk to others about the study if you wish. Ask me if there is anything that is not clear. The information below describes the research in detail, in brief, participation would involve filling in **four short questionnaires**. I can either meet with you to complete the questionnaires, or I can post you the questionnaires for you to complete at your convenience and return by post. Your participation would be very much appreciated.

If you decide you would like to participate in the research, please contact me. You can either complete and return the contact details slip, email me at or telephone me on (01463) 704683.

Study title:

Self-reported relationship style and ability to think about thoughts:

A comparison of borderline personality disorder and depression

What is the purpose of the study?

This study is being carried out as part of an educational project for submission as part of the University of Edinburgh Doctorate in Clinical Psychology programme.

I am interested in how individual differences in relationship styles and ways of thinking are related in people who have a diagnosis of borderline personality, compared to people who do not have this diagnosis.

Why was I invited to participate?

You were invited to participate because you have experienced symptoms of depression. I have asked a range of healthcare professionals to pass on information about this study and tell people how they can participate. They are giving this information to people that they work with who have symptoms of depression.

Do I have to take part?

It is up to you to decide to join the study. I will describe the study and go through this information sheet. If you agree to take part, I will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. This would not affect the standard of care you receive.

What will happen to me if I take part?

You will be asked to fill-in four questionnaires, and this is likely to take 30 minutes to an hour. You may choose to fill in the questionnaires and return them to me by post. Or, if you prefer, I may be able to arrange to meet with you to fill in the questionnaires with you at a convenient time and location, for example at the hospital, or a health centre.

If you are being seen by the psychiatry service, I may need to confirm your diagnosis, by contacting your psychiatrist and looking at your psychiatric notes. The information you provide will remain confidential, and will not be passed on to your psychiatrist or any other healthcare professional. Your participation in the study and your questionnaire responses will not be recorded in your medical notes.

B.12 Information about the research for participants with symptoms of depression - continued

Information about the research

Version: 4 (control)

Date: 10 May 2010

What will I have to do?

You will be asked to complete four short questionnaires. You may complete the questionnaires yourself, or I can read out the questions to you if you prefer.

One questionnaire is about your relationships with other people; you will be asked to read 30 statements and rate whether you agree with them on a scale of 1 to 5. One questionnaire is about the way that you think; you will be asked to read thirty statements and rate whether they apply to you on a scale of 1 to 4. You will also be given a 34-item questionnaire about your current social functioning and psychological wellbeing, and a 14-item questionnaire about your mood.

I will also ask for some basic information (demographic information), such as your age and gender. I will record this on a separate sheet.

What are the disadvantages and risks of taking part?

The study will take approximately an hour of your time, plus the time it takes you to travel to the research venue, and the cost of travel. It is possible that some of the questionnaire items could upset you. Should this happen, you are free to discontinue, and may leave at any time.

What are the possible benefits of taking part?

I cannot promise the study will help you but the information we get from this study may help improve understanding of borderline personality disorder and the effect that it has on people. Many people experience participation in research as a positive experience.

Will my taking part in the study be kept confidential?

Yes. I will follow ethical and legal practice and all information about you will be handled in confidence. A letter will be sent to your GP to let them know that you are taking part in the study.

All information which is collected about you during the course of the research will be kept strictly confidential. The questionnaires and demographic information sheet will not contain any personal information (such as your name or address), and will be stored separately from your consent form. A participant number will be assigned to your consent form, demographic information sheet and your completed questionnaires. Only the researcher will have access to identifiable data.

The consent forms, questionnaires and demographic information will be stored securely on NHS premises by the researcher. The anonymised information will be entered into a statistical computer programme. All data will be destroyed following the completion of the academic project. The data will not be used for future studies.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed.

If you have a concern about any aspect of this study, you should ask to speak to the researcher who will do their best to answer your questions (telephone number: 01463 704683). If you remain unhappy and wish to complain formally, you can do this via the NHS Complaints Procedure. Details can be obtained from

The Complaints Team, NHS Highland, PO BOX 5713, Inverness, IV1 9AQ
Phone: 01463 705997
Fax: 01463 713 844
Email: nhshighland.complaints@nhs.net

B.12 Information about the research for participants with symptoms of depression - continued

Information about the research

Version: 4 (control)

Date: 10 May 2010

What happens if I don't want to carry on with the study?

You may withdraw at any time before you have completed all of the questionnaires and left the research venue. After this point your data will be anonymised and compiled with other people's data. Your decision to leave the study will be respected, and the researcher will not attempt to contact you again.

What will happen to the results of the research study?

The results will be written-up as part of a doctoral thesis, for submission to the University of Edinburgh Doctorate in Clinical Psychology programme. They may also be written-up for publication in a peer reviewed journal. You will not be identified in any report or publication.

Who is sponsoring the research?

The research is being sponsored by the University of Edinburgh, Clinical Psychology Department, School of Health in Social Science.

Who has reviewed the study?

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by South of Scotland Research Ethics Committee. The study has also been reviewed and given favourable opinion by the Department of Clinical Psychology Ethics committee and the School of Health in Social Science Ethics committee at the University of Edinburgh.

My contact details:

If you would like to participate in the research, or would like more information, please contact me:

Laura Walton
Drumossie Unit, New Craigs Hospital, Leachkin Road, Inverness, IV3 8NP
Telephone: (01463) 704683
Email: _____

You will be given a copy of this information sheet and a signed consent form to keep.

Contact Details

If you are interested in participating in this research, please fill in your contact details below and return to the researcher.

Title:..... First Name:..... Surname:

Address:.....
.....
.....

Telephone number (if applicable):.....

E-mail address (If applicable):.....

I consent to my contact details being given to the researcher so that they can contact me to discuss the research and answer any questions I have about participation. This does not mean that I have agreed to participate.

Signature: Date:

B.2 Covering letter inviting participation

Psychology Service cover letter

Version: 1

Date: 20 February 2010

**Department of Psychological
Services**
New Craigs Hospital
6-16 Leachkin Road
Inverness IV3 8NP
Telephone 01463 704683
Fax 01463 704686
www.show.scot.nhs.uk/nhshighland



Date:

Our Ref: LW/MP

Dear ,

You are invited to participate in a research study being carried out by Laura Walton, a Trainee Clinical Psychologist in NHS Highland. The study is part of a research project for a programme of study at the University of Edinburgh.

Your participation in the study would involve completing four short questionnaires, and the provision of some background information. Your participation and your responses to the questionnaires would be kept confidential.

Whether or not you decide to participate will in no way affect the treatment you receive from this service. The questionnaires would not be accessible to anyone from this service and would not be used to inform your treatment.

Enclosed is an "Information about the Research" leaflet which provides more detailed information about the study. If you decide you would like to participate in the research, or would like further information, please contact the researcher, Laura Walton, by post, email: , or telephone: (01463) 704683.

Thank you for taking the time to consider this invitation. Your participation would be very much appreciated.

Yours Sincerely,

Dr. Sheelagh Rodgers
Area Clinical Psychologist

Working with you to make Highland the healthy place to be



Chair: Mr G Coutts
Chief Executive: Dr Roger Gibbins BA MBA PhD

NHS Highland, Assynt House, Beechwood Park, INVERNESS
IV2 3BW
*Highland NHS Board is the common name of Highland
Health Board*

B.3 Consent form

Consent Form



Version: 3

Date: 20 February 2010

Department of Psychological Services

New Craigs

6-16 Leachkin Road

Inverness IV3 8NP

Telephone 01463 704683

Fax 01463 704686

www.show.scot.nhs.uk/nhshighland



Patient Identification Number:



CONSENT FORM

Title of Project: Self-reported relationship style and ability to think about thoughts:
A comparison of borderline personality disorder and depression

Name of Researcher: Laura Walton

Please initial box

1. I confirm that I have read and understand the information sheet dated 20th February 2010 (version 3) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.

☐

3. I understand that the researcher will contact my psychiatrist in order to confirm my diagnosis. However, my questionnaire responses are confidential and will not be passed on to professionals involved in my care. If necessary, relevant sections of my medical notes, may be looked at by the researcher. I give permission for this individual to have access to this information.

☐

4. I agree to a letter being sent to my GP to inform them that I am participating in the study.

☐

5. I understand that relevant anonymised data collected during the study, may be looked at by individuals from the University of Edinburgh, from regulatory authorities or from the NHS Trust. I give permission for these individuals to have view my data.

☐

6. I understand that if there are concerns about a risk of harm to myself or others during my participation, the researcher will assess the risk and take appropriate action. This may involve contacting other professionals, including my GP, in order to communicate information relevant to concerns about risks of harm.

☐

7. I agree to take part in the above study.

☐

8. I would/I would not (delete as applicable) like the researcher to send me information about findings of the research.

☐

Name of participant: _____ Date: _____ Signature: _____

Name of person
taking consent: _____ Date: _____ Signature: _____

B.4 Letter to participants GP

GP letter

Version: 1

Date: 20 February 2010



Department of Psychological Services

New Craigs Hospital

6-16 Leachkin Road

Inverness IV3 8NP

Telephone 01463 704683

Fax 01463 704686

www.show.scot.nhs.uk/nhshighland



Date:

Our Ref: LW/MP

Dear Dr. ,

I am writing to inform you that your patient, , has given their informed consent to participate in a psychology research study. The study is part of an educational project for a programme of study at the University of Edinburgh.

The title of the study is: "Self-reported relationship style and ability to think about thoughts: A comparison of borderline personality disorder and depression". Participants are asked to complete four short questionnaires, and provide basic background information. This is expected to take approximately one hour.

If you would like further information about the study, please do not hesitate to contact me at the above address.

Yours Sincerely,

Laura Walton
Trainee Clinical Psychologist

Working with you to make Highland the healthy place to be



Chair: Mr G Coutts

Chief Executive: Dr Roger Gibbins BA MBA PhD

NHS Highland, Assynt House, Beechwood Park, INVERNESS
IV2 3BW

Highland NHS Board is the common name of Highland Health Board

B.5 Relationship Scales Questionnaire (RSQ)

Version: 1

RSQ

Version Date: 04.01.2010

Patient Identification Number:

Please read each of the following statements and rate the extent to which you believe each statement best describes your feelings about close relationships.

		Not at all like me		Somewhat like me		Very much like me
1	I find it difficult to depend on other people.	1	2	3	4	5
2	It is very important to me to feel independent.	1	2	3	4	5
3	I find it easy to get emotionally close to others.	1	2	3	4	5
4	I want to merge completely with another person.	1	2	3	4	5
5	I worry that I will be hurt if I allow myself to become too close to others.	1	2	3	4	5
6	I am comfortable without close emotional relationships.	1	2	3	4	5
7	I am not sure that I can always depend on others to be there when I need them.	1	2	3	4	5
8	I want to be completely emotionally intimate with others.	1	2	3	4	5
9	I worry about being alone.	1	2	3	4	5
10	I am comfortable depending on other people.	1	2	3	4	5
11	I often worry that romantic partners don't really love me.	1	2	3	4	5
12	I find it difficult to trust others completely.	1	2	3	4	5
13	I worry about others getting too close to me.	1	2	3	4	5
14	I want emotionally close relationships.	1	2	3	4	5
15	I am comfortable having other people depend on me.	1	2	3	4	5
16	I worry that others don't value me as much as I value them.	1	2	3	4	5
17	People are never there when you need them.	1	2	3	4	5
18	My desire to merge completely sometimes scares people away.	1	2	3	4	5
19	It is very important to me to feel self-sufficient.	1	2	3	4	5
20	I am nervous when anyone gets too close to me.	1	2	3	4	5
21	I often worry that romantic partners won't want to stay with me.	1	2	3	4	5
22	I prefer not to have other people depend on me.	1	2	3	4	5
23	I worry about being abandoned.	1	2	3	4	5
24	I am somewhat uncomfortable being close to others.	1	2	3	4	5
25	I find that others are reluctant to get as close as I would like.	1	2	3	4	5
26	I prefer not to depend on others.	1	2	3	4	5
27	I know that others will be there when I need them.	1	2	3	4	5
28	I worry about having others not accept me.	1	2	3	4	5
29	Romantic partners often want me to be closer than I feel comfortable being.	1	2	3	4	5
30	I find it relatively easy to get close to others.	1	2	3	4	5

B.6 Metacognitions Questionnaire – 30 item (MCQ-30)

Version: 1

MCQ

Version Date: 04.01.2010

Patient Identification Number:

This questionnaire is concerned with beliefs people have about their thinking. Listed below are a number of beliefs that people have expressed. Please read each item and indicate how much you generally agree with it by circling the appropriate number. Please respond to all of the items, there are no right or wrong answers.

		Do not agree	Agree slightly	Agree moderately	Agree very much
1	My worrying is dangerous for me	1	2	3	4
2	My worrying could make me go mad	1	2	3	4
3	I have a poor memory	1	2	3	4
4	I cannot ignore my worrying thoughts	1	2	3	4
5	I need to worry in order to remain organised	1	2	3	4
6	I pay close attention to the way my mind works	1	2	3	4
7	I could make myself sick with worrying	1	2	3	4
8	I have little confidence in my memory for places	1	2	3	4
9	I need to worry in order to work well	1	2	3	4
10	I think a lot about my thoughts	1	2	3	4
11	I do not trust my memory	1	2	3	4
12	I have little confidence in my memory for words and names	1	2	3	4
13	I will be punished for not controlling certain thoughts	1	2	3	4
14	It is bad to think certain thoughts	1	2	3	4
15	I am aware of the way my mind works when I am thinking through a problem	1	2	3	4
16	My worrying thoughts persist, no matter how I try to stop them	1	2	3	4
17	I constantly examine my thoughts	1	2	3	4
18	I have little confidence in my memory for actions	1	2	3	4
19	I should be in control of my thoughts all of the time	1	2	3	4
20	Worrying helps me to solve problems	1	2	3	4
21	Worrying helps me to avoid problems in the future	1	2	3	4
22	Worrying helps me cope	1	2	3	4
23	If I did not control a worrying thought and then it happened, it would be my fault	1	2	3	4
24	I am constantly aware of my thinking	1	2	3	4
25	Not being able to control my thoughts is a sign of weakness	1	2	3	4
26	If I could not control my thoughts, I would not be able to function	1	2	3	4
27	My memory can mislead me at times	1	2	3	4
28	Worrying helps me to get things sorted out in my mind	1	2	3	4
29	I monitor my thoughts	1	2	3	4
30	When I start worrying I cannot stop	1	2	3	4

B.7 Metacognitions Questionnaire – 30 Item (MCQ-30) Subscales

1 Cognitive confidence

- 3** I have a poor memory
- 8** I have little confidence in my memory for places
- 11** I do not trust my memory
- 12** I have little confidence in my memory for words and names
- 18** I have little confidence in my memory for actions
- 27** My memory can mislead me at times

2 Positive beliefs about worry

- 5** I need to worry in order to remain organised
- 9** I need to worry in order to work well
- 20** Worrying helps me to solve problems
- 21** Worrying helps me to avoid problems in the future
- 22** Worrying helps me cope
- 28** Worrying helps me to get things sorted out in my mind

3 Cognitive self-consciousness

- 6** I pay close attention to the way my mind works
- 10** I think a lot about my thoughts
- 15** I am aware of the way my mind works when I am thinking through a problem
- 17** I constantly examine my thoughts
- 24** I am constantly aware of my thinking
- 29** I monitor my thoughts

4 Uncontrollability and danger

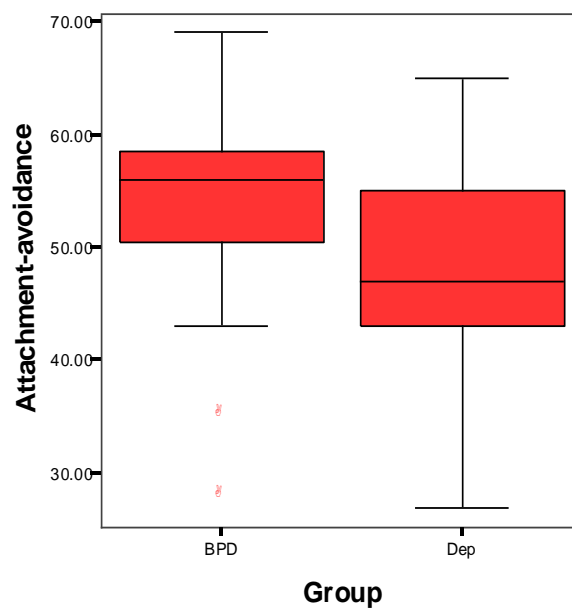
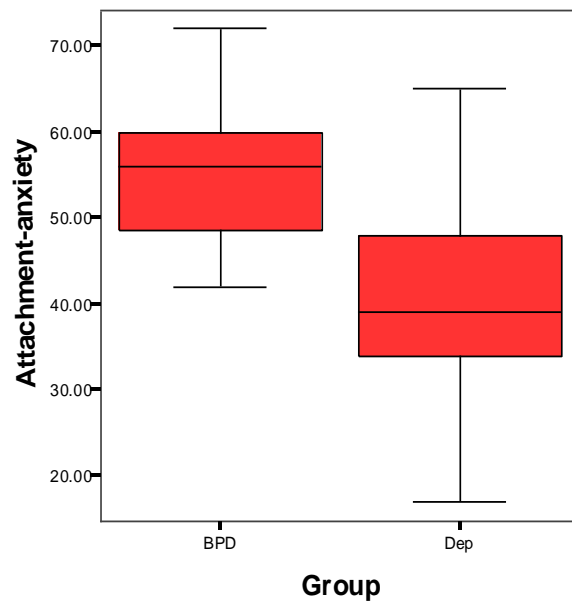
- 1** My worrying is dangerous for me
- 2** My worrying could make me go mad
- 4** I cannot ignore my worrying thoughts
- 7** I could make myself sick with worrying
- 16** My worrying thoughts persist, no matter how I try to stop them
- 30** When I start worrying I cannot stop

5 Need to control thoughts

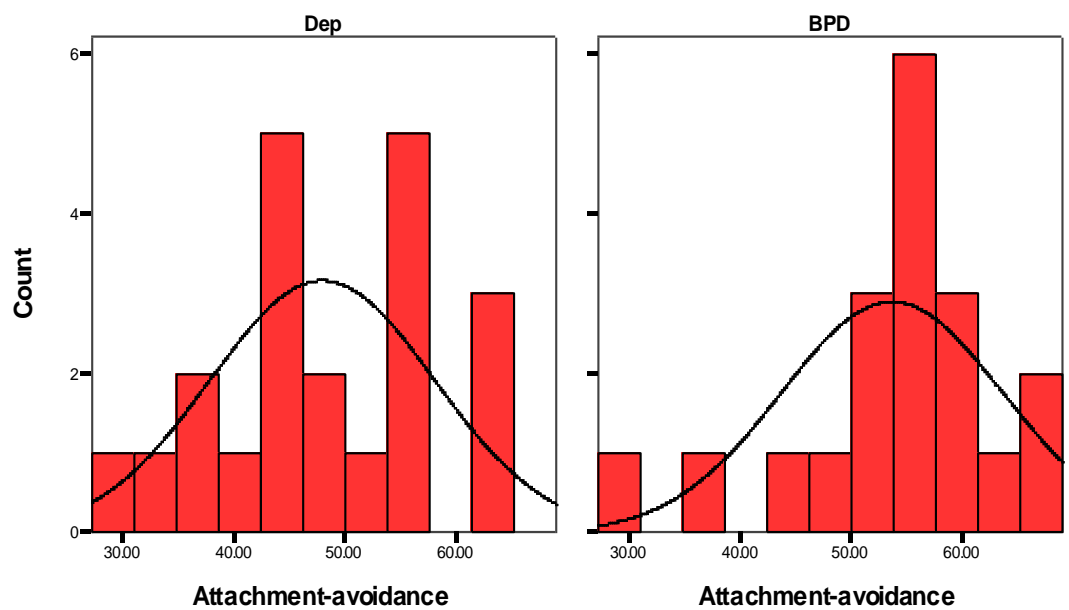
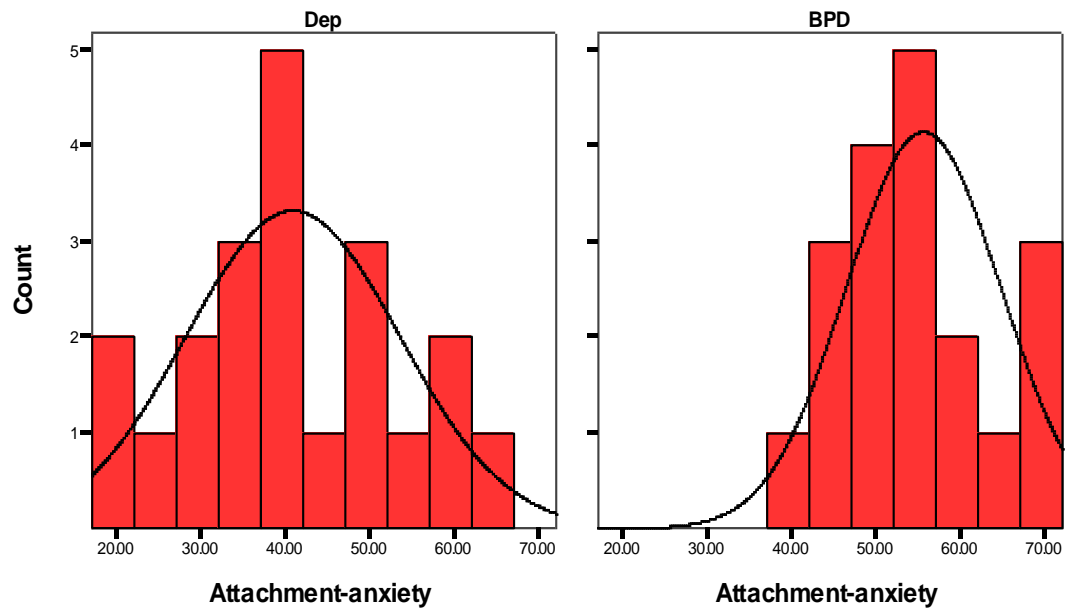
- 13** I will be punished for not controlling certain thoughts
- 14** It is bad to think certain thoughts
- 19** I should be in control of my thoughts all of the time
- 23** If I did not control a worrying thought and then it happened, it would be my fault
- 25** Not being able to control my thoughts is a sign of weakness
- 26** If I could not control my thoughts, I would not be able to function

Appendix C - Additional Results Tables and Figures

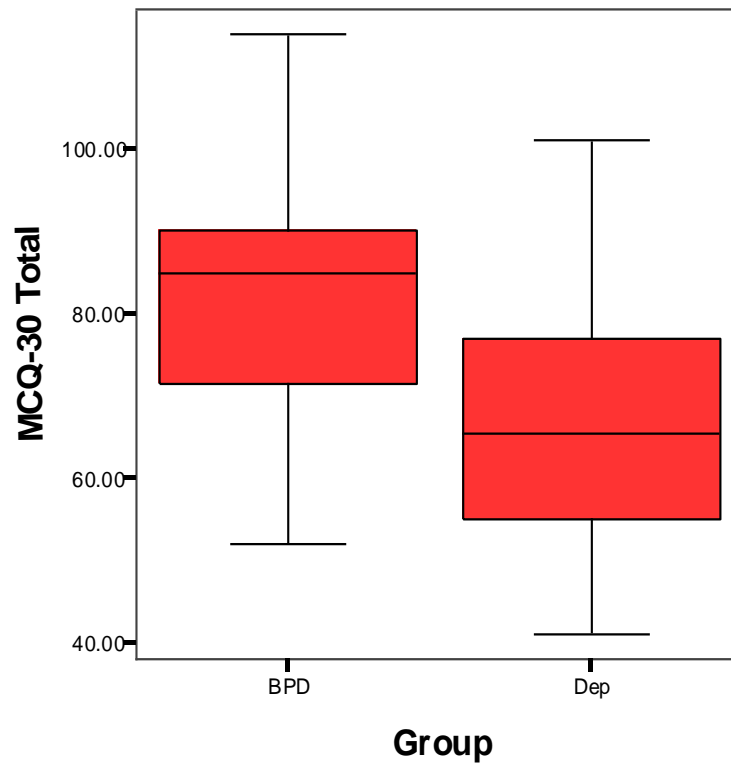
C.11 Boxplots of RSQ subscale scores in BPD and depression groups



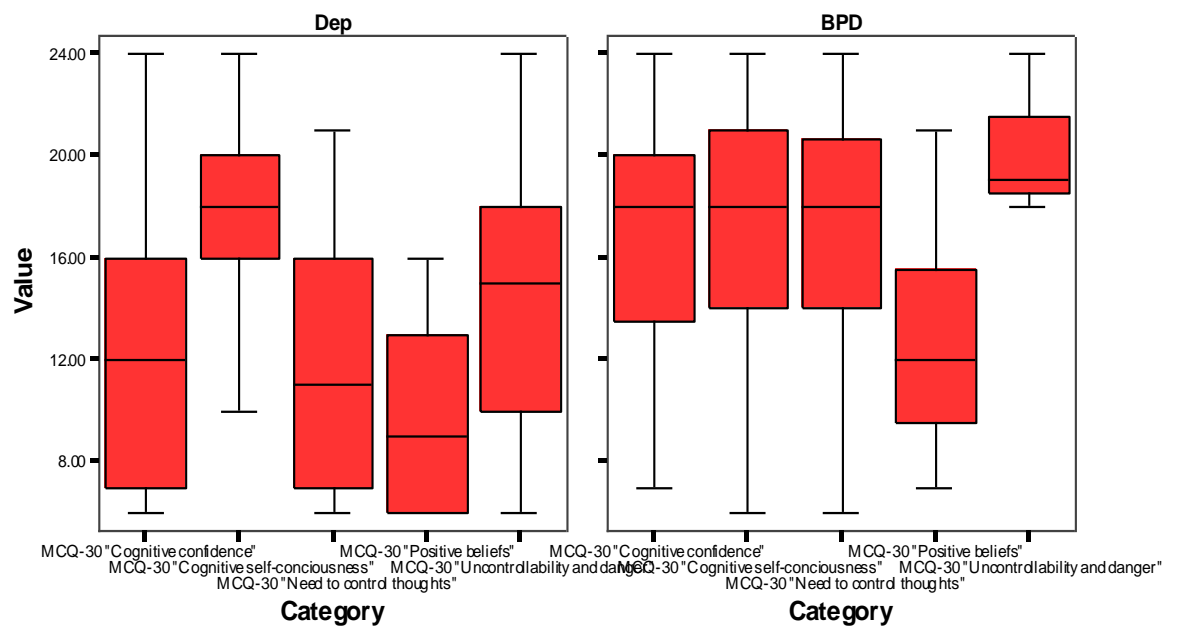
C.12 Histograms of RSQ subscale scores in BPD and depression groups



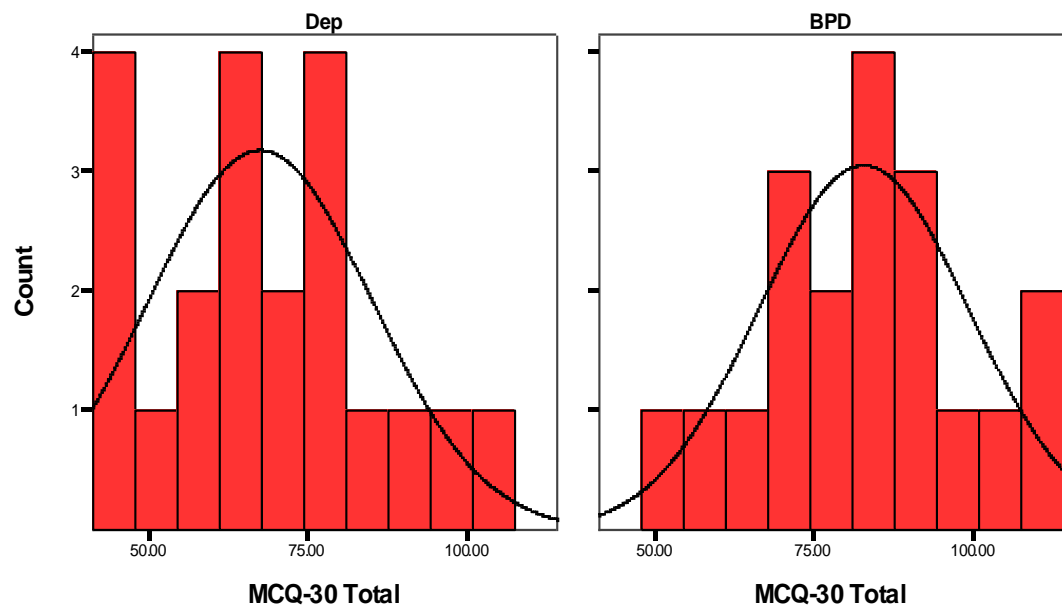
C.13 Boxplot of MCQ-30 total scores in BPD and depression groups



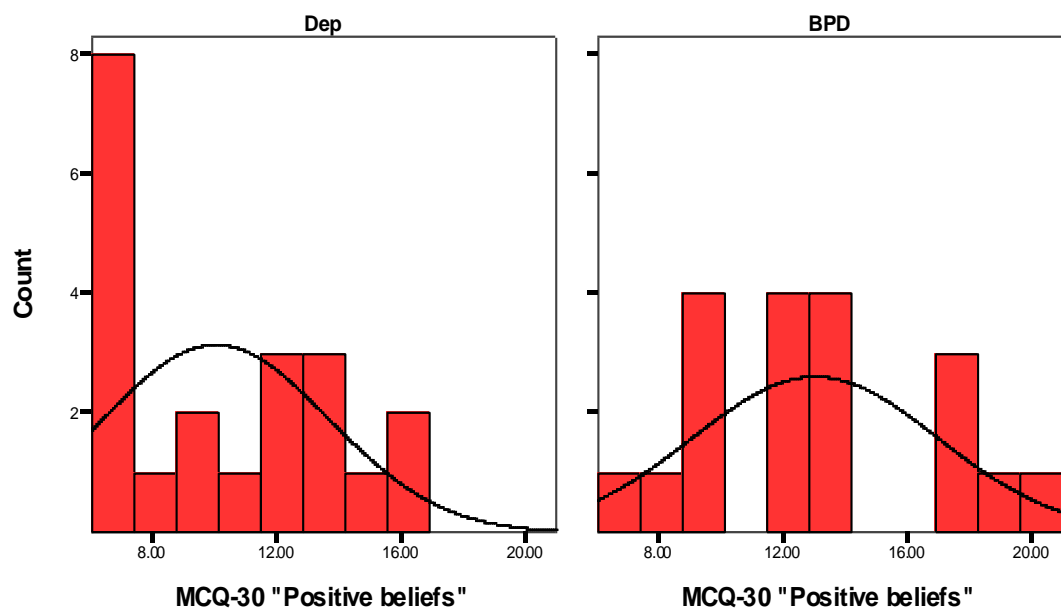
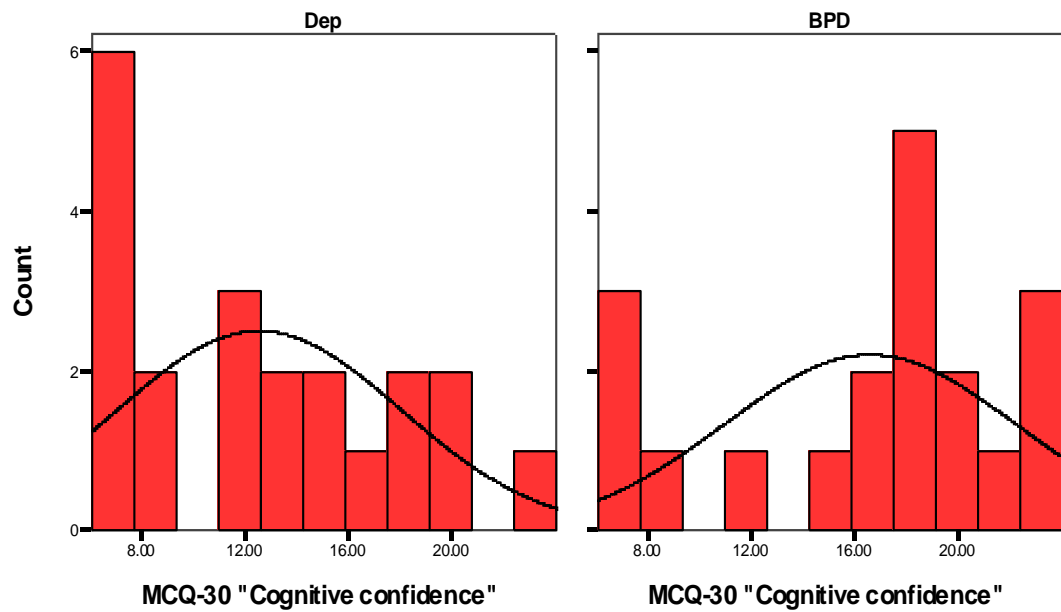
C.14 Boxplots of MCQ-30 subscale scores in BPD and depression groups



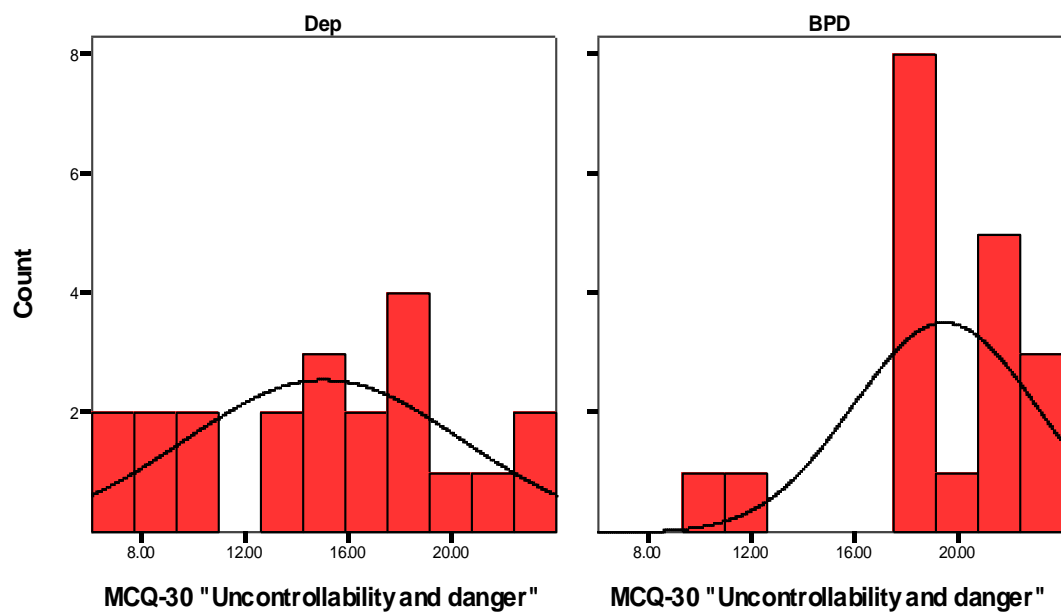
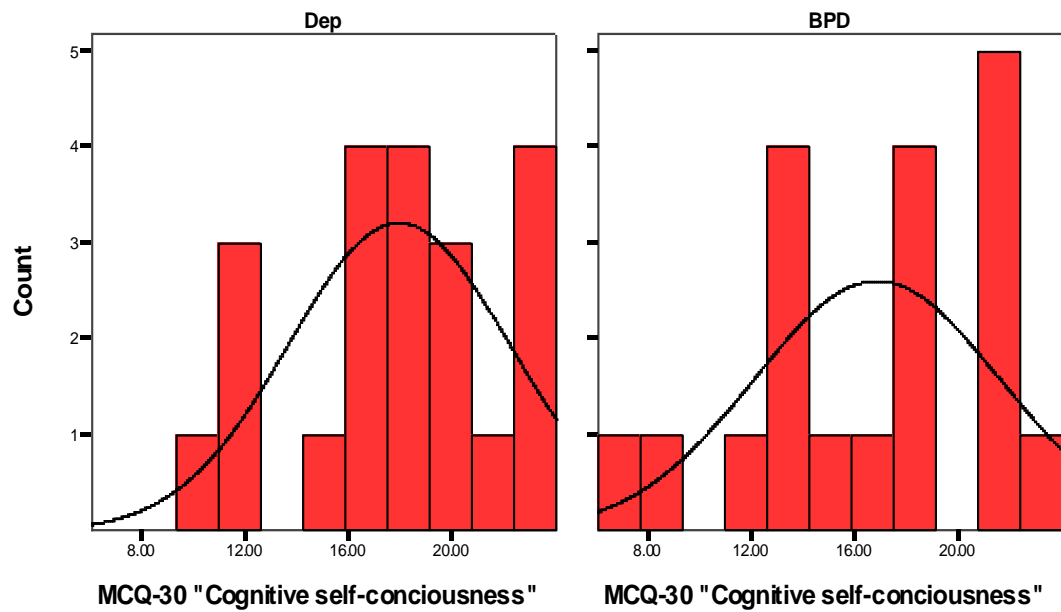
C.15 Histograms of MCQ-30 total scores in BPD and depression groups



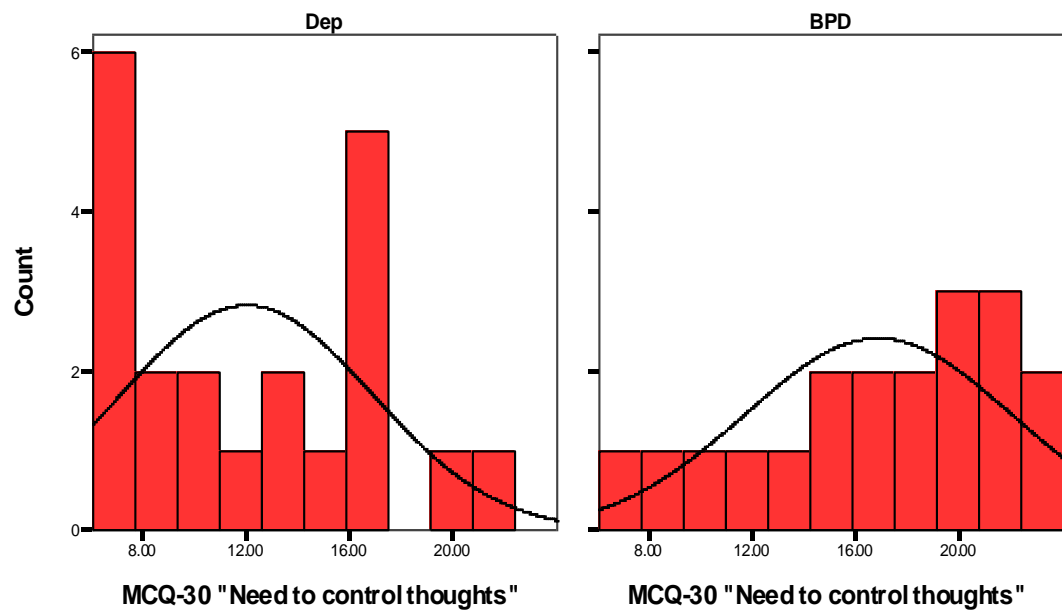
C.16 Histograms of MCQ-30 subscale scores in BPD and depression groups



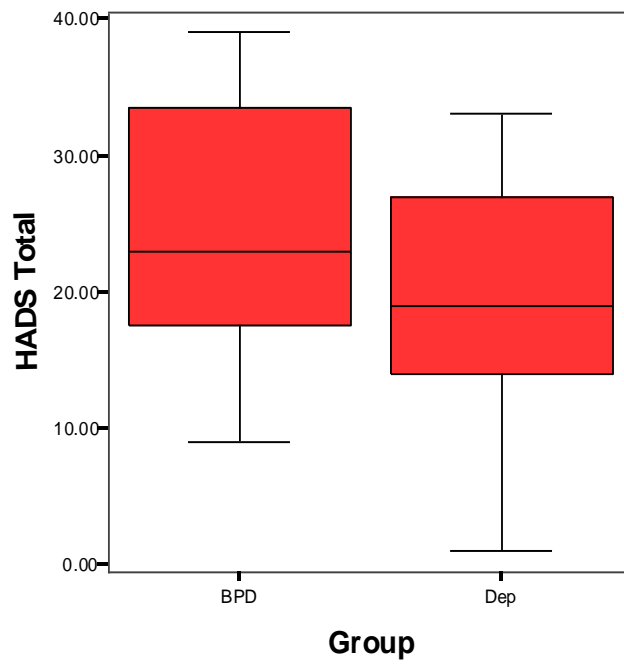
C.16 Histograms of MCQ-30 subscale scores in BPD and depression groups - continued



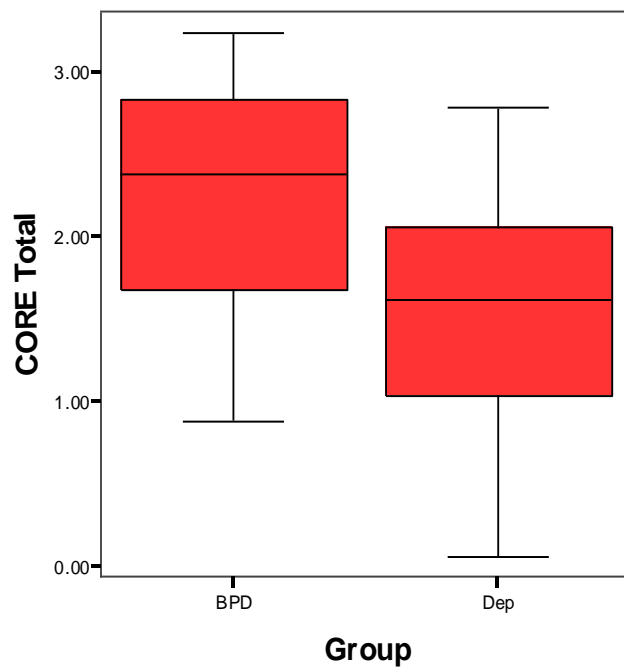
C.16 Histograms of MCQ-30 subscale scores in BPD and depression groups - continued



C.17 Boxplot of HADS total scores in BPD and depression groups



C.18 Boxplot of CORE total scores in BPD and depression groups



C.2 Relationship Scales Questionnaire Subscales

Item Number

Attachment-anxiety

- | | |
|----|--|
| 4 | I want to merge completely with another person. |
| 7 | I am not sure that I can always depend on others to be there when I need them. |
| 8 | I want to be completely emotionally intimate with others. |
| 9 | I worry about being alone. |
| 11 | I often worry that romantic partners don't really love me. |
| 12 | I find it difficult to trust others completely. |
| 14 | I want emotionally close relationships. |
| 16 | I worry that others don't value me as much as I value them. |
| 17 | People are never there when you need them. |
| 18 | My desire to merge completely sometimes scares people away. |
| 21 | I often worry that romantic partners won't want to stay with me. |
| 22 | I prefer not to have other people depend on me. |
| 23 | I worry about being abandoned. |
| 25 | I find that others are reluctant to get as close as I would like. |
| 28 | I worry about having others not accept me. |

Attachment-avoidance

- | | |
|---------------|--|
| 1 | I find it difficult to depend on other people. |
| 2 | It is very important to me to feel independent. |
| 3 (reversed) | I find it easy to get emotionally close to others. |
| 5 | I worry that I will be hurt if I allow myself to become too close to others. |
| 6 | I am comfortable without close emotional relationships. |
| 10 (reversed) | I am comfortable depending on other people. |
| 13 | I worry about others getting too close to me. |
| 15 (reversed) | I am comfortable having other people depend on me. |
| 19 | It is very important to me to feel self-sufficient. |
| 20 | I am nervous when anyone gets too close to me. |
| 24 | I am somewhat uncomfortable being close to others. |
| 26 | I prefer not to depend on others. |
| 27 (reversed) | I know that others will be there when I need them. |
| 29 | Romantic partners often want me to be closer than I feel comfortable being. |
| 30 (reversed) | I find it relatively easy to get close to others. |

C.3 Metacognitions Questionnaire Internal Consistency

	Cronbach's Alpha	
	BPD	Depression
Cognitive confidence	0.92	0.93
Positive beliefs about worry	0.57	0.86
Cognitive self-confidence	0.83	0.79
Uncontrollability and danger	0.83	0.9
Need to control thoughts	0.80	0.84
Total Score	0.90	0.94